

2012

An investigation into the moderating role of fear appeals on the relationship between regulatory fit and persuasion

Nam Young Kim

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AN INVESTIGATION INTO THE MODERATING ROLE OF FEAR APPEALS
ON THE RELATIONSHIP BETWEEN REGULATORY FIT AND PERSUASION

A Dissertation

Submitted to the Graduate Faculty of
the Louisiana State University and
Agricultural and Mechanical College
in partial fulfillment of the
requirements for the degree of
Doctor of Philosophy

in

The Manship School of Mass Communication

、

by

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December 2012

ACKNOWLEDGEMENTS

It took me five years to complete this long journey. Completing this doctoral program and my doctoral dissertation was the one of the toughest challenges in my life, but it was also an invaluable experience. Without my lovely family, supportive faculty members, and great friends, I could not have made my dreams come true. I am so appreciative to my committee co-chairs, Dr. Margaret DeFleur and Dr. Megan Sanders, for all their advice, guidance, and priceless support during my doctoral program. Dr. DeFleur has been a wonderful mentor who always trusts, supports, and encourages me, and she has guided me to become a responsible and well-prepared scholar. Dr. Sanders always carefully listens to my ideas and shares her thoughts with me, thus fostering my curiosity and creativity. Her critical questioning always inspires me to think more delicately and thoroughly. I also want to thank Dr. Anne Osborne for her great advice about the advertising field and her kind encouragement. I am also very appreciative to my committee members, Dr. Sean Lane and Dr. Yejun Wu, for their great suggestions to improve my dissertation and their wonderful support. Many thanks you to Dr. Kevin Grobman for helping me combine mass communication and psychology to advance my initial dissertation ideas.

I am also very thankful to my parents, Sang Cheol Kim and Jeong Suk Jang, for their incredible encouragement and their never-ending love. I also want to thank my sister, Ja Young Kim, for her cheerleading and her wisdom that inspired me to do my best every moment. Most importantly, I am so appreciative of my husband, Kiwon Seo, for his wonderful love and incredible support. I am very lucky to have such a beautiful family to support my dreams and am grateful to them for providing me laughter and comfort during these past five years.

I also greatly appreciate my dear friend, Dr. Kim Yunjung, for her sincere friendship and thoughtfulness. She is the most amazing person I have ever met, and I greatly appreciate every

moment we share. I also want to thank the people who helped make my journey through the doctoral program successful and enjoyable: Masudule Biswas, HyunMee Kang, and Kristin Marks. I am truly grateful to them for making me believe that I can achieve difficult goals. I will always remember the thankfulness I have in my heart for these individuals as I move on to another journey.

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ABSTRACT

As one of the ways to persuade young people effectively, several scholars have indicated that using a tailored message that is consistent with individuals' concerns and interests can influence their attitude and behavioral changes. Among diverse tactics to construct tailored health-messages, this research especially paid attention to individuals' motivational goals (i.e., regulatory focus) that make them more inclined to a certain outcome. While promotion-oriented individuals primarily focus on how to achieve a desired ending, prevention-oriented individuals mainly focus on avoiding undesirable outcomes (Higgins, 1997; Higgins et al., 2001). Although numerous studies support the positive effects of the congruency between regulatory focus and message frame on persuasion, the researcher was concerned with the limited discussion about the effects of some message attributes (i.e., fear appeals) in tailored health-related Public Service Announcements (PSAs). In particular, a large number of health campaigns provide information in the context of highly emotive graphic images and text; however, the stimulus used in previous studies did not consider such factors' possible moderating effects.

In the context of an anti-binge drinking health campaign, the researcher therefore focused on how the level of fear in tailored messages influences college students' perceptions of the message, their message processing, and their attitudes and behavioral changes. Using a 2 (regulatory focus: promotion vs. prevention) X 2 (message framing: gain vs. loss) X 2 (level of fear appeals: low vs. high) experimental design, the researcher found that messages that are consistent with individuals' interests are more persuasive. When the tailored message contained a low fear appeal, more fluent message processing and greater perceptions of message relevance occurred, which in turn impacted persuasion. However, the findings indicate that message effectiveness should be discussed cautiously because the effectiveness of tailored messages is

reduced when combined with a high fear appeal. Overall, this study advances our understanding of how a tailored message's attributes influence individuals' message processing and persuasion. The findings have practical and theoretical implications for future studies on the use of emotional appeals in persuasive advertising.

CHAPTER 1: INTRODUCTION

For decades, the way that messages are framed to encourage healthy behaviors has received considerable attention from scholars who investigate the most effective message techniques for persuasion (Rothman, Martino, Bedell, Detweiler, & Salovey, 1999). In the context of health communication, message framing is understood to mean a message trait that emphasizes either the disadvantages of not performing a health behavior or the advantages of performing the health behavior (Cho & Boster, 2008; O’Keefe & Jensen, 2006; Stephenson & Witte, 2000). Numerous studies have focused on whether a given message frame that has one intended emphasis (e.g., loss frame; a message that stresses the negative consequences of failing to perform a certain behavior) can be perceived as more persuasive than others (Block & Keller, 1995; Rothman, Salovey, Antone, Keough & Martin, 1993). Beyond the effects of message framing, some studies have also underscored the importance of investigating other elements’ interactions with message frames in order to influence people’s attitudes and behaviors (Edwards, Elwyn, Covey, Matthews, & Pill, 2001; Maheswaran & Meyers-Levy, 1990; Meyerowitz & Chaiken, 1987). For instance, a review of recent message framing studies particularly reveals that a message’s effectiveness varies depending on the receiver’s characteristics and the perceived importance of an issue (Cho & Boster, 2008; Latimer, Salovey, & Rothman, 2007; O’Keefe & Jensen, 2006; Schneider et al., 2001). Since receivers can respond differently to the same persuasive message, a major issue in the study of persuasion therefore involves investigating the circumstances that make each receiver pay attention to the argument and process the messages effectively.

There is growing agreement that matching a persuasive message’s frame to meet individuals’ unique interests or goals (i.e., message tailoring) enhances the receivers’ attention to

the message and message's effectiveness (Aaker & Lee, 2001; Avnet & Higgins, 2006; Lee & Aaker, 2004). Indeed, tailoring messages in health-related campaigns frequently yields positive results, such as more attention paid to the messages and higher intention to change behaviors, through enhanced perceptions of risk and increased personal relevance, for instance (Mann, Sherman, & Updegraff, 2004; Rimal & Adkins, 2003; Spiegel, Grant-Pillow, & Higgins, 2004). In particular, the premise of how individuals' characteristics interplay with aspects of a message in a way that can affect people's attitudes and behaviors is the province of the *regulatory focus* perspective (Higgins, 1996; Higgins, Roney, Crowe, & Hymes, 1994).

Tailoring Messages for Persuasion

One of the simplest ways to create tailored messages originates from the study of regulatory focus, which emphasizes congruency between an individual's motivational goals and message frames. According to regulatory focus theory, people's specific goals or interests regulate their behaviors and judgments (Higgins, 1987, 1997). Scholars have classified this kind of regulatory orientation as stemming from one of two different motivational goals: *a promotion focus* or *a prevention focus* (Higgins, 1997). While promotion-oriented individuals primarily focus on how to achieve success and advancement, prevention-oriented individuals are concerned mainly with ensuring safety and security (Higgins, 1997; Higgins et al., 2001). Accordingly, people differ in the extent to which they prefer a certain message frame, in that promotion-oriented individuals prefer more gain-framed information than that which is loss-framed, whereas the reverse is true for prevention-oriented individuals (Cesario, Grant, & Higgins, 2004; Lee & Aaker, 2004; Mann, Sherman, & Updegraff, 2004).

When a message frame emphasizes a certain strategy to attain goals (e.g., adopting healthy behaviors to attain benefits), and it is compatible with people's motivational goals (e.g., a

promotion focus), researchers define this condition as the *regulatory fit* (Crowe & Higgins, 1997; Higgins, 1996). This message matching has frequently been found to strengthen individuals' motivation to thoughtfully process the message and enhance their understandings of the information through an increase in perceived personal relevance (Crowe & Higgins, 1997; Higgins, 1996; Mann et al., 2004; Spiegel, Grant-Pillow, & Higgins, 2004). Furthermore, numerous researchers have found more message effectiveness under the regulatory fit condition than under the nonfit condition as a consequence of increased feelings of personal relevance (Avnet & Higgins, 2006; Lee & Aaker, 2004). Because manipulating a condition of regulatory fit is simple and its consequences are primarily positive, many researchers suggest promoting various health campaigns and advertising appeals by practically using tailored messages that fit with individuals' regulatory focus (Latimer et al., 2008; Spiegel et al., 2004).

The Intensity of Message Effectiveness under Fearful Circumstances

Although the future of using tailoring messages seems to be bright, it is nearly impossible to conclude its positive effects without considering the influence of other message features, which can modify the fit's effectiveness (Leshner, Bolls, & Wise, 2011; Shen & Dillard, 2007; Wong & Cappella, 2009). The current discussion of regulatory fit has rarely examined the intensity of message matching effects in response to highly emotional messages, such as those that evoke fear (Avnet & Higgins, 2004; Shen & Dillard, 2007). This is because a large amount of research on regulatory fit started from the assumption that the effects of fit might take place regardless of individuals' arousals and feelings (Avnet & Higgins, 2006; Higgins, 2000; Higgins, Idson, Freitas, Spiegel, & Molden, 2003). Consequently, regulatory fit studies have not sufficiently investigated much about how the interaction between regulatory fit and message attributes influences cognitive and emotional responses. Instead, extensive research has sought

simply to comprehend the manner in which information is processed under the condition of fit (Avnet & Higgins, 2006; Cesario et al., 2004; Idson, Liberman, & Higgins, 2004). Moreover, when manipulating the condition of regulatory fit, most studies are primarily focused on how to create tailoring messages to fit individuals' motivational systems, not consider the possible effect of presented image or sound arousing fears in the tailoring messages. Therefore, most placed no variation on the level of fear across all other conditions that may examine the moderating role of fear in message processing (Kim, 2006; Zhao, & Pechmann, 2007).

Overall, when considering the results of previous studies on fear appeals, there is a conflicting expectation about such appeals' effects. On one hand, messages that use fear appeals could be persuasive because such appeals tend to grab people's attention to the messages and even changing their health-related behaviors (Boster & Mongeau, 1984; Dillard, 1994). However, other research cautions about the potentially negative consequences in response to the use of high fear appeals in messages (Janis & Terwillinger, 1962; Keller & Block, 1996). In the case of a message that evokes a strong perception of fear, several researchers have suggested that it can activate *fear control*, which leads to message rejection or lessens personal relevance of the message to control negative feelings (Stephenson & Witte, 1998; Witte, 1994). From a similar perspective, some findings have suggested that when faced with such fearful messages, a person may be more motivated to avoid cognitive responses that increase attention to the message's arguments (Bradle, Codispoti, Cuthbert, & Lang, 2001; Bolls, Lang, & Potter, 2001; Keller & Block, 1996).

In this vein of research, the present project concerns the possibility that there may be a certain circumstance that makes people not use the cognitive resources from regulatory fit or avoid more careful message processing because of an interaction between the fit and a certain

message characteristic (Aaker & Lee, 2006). This area of research has yet to be fully tested. Since the current framework of the regulatory fit oversimplifies the full picture of messages processing, such as message elaboration (e.g., relevant thoughts or supportive thoughts that are consistent with the arguments presented) and affective responses (e.g., feeling) (Shen & Dillard, 2007; Yan, Dillard, & Shen, 2010), it is important to examine these multiple stages of responding to emotional circumstances to enhance our understanding of regulatory fit and new aspects of tailored messages' effectiveness.

The Study's Significance

The purpose of this dissertation is to explore whether the regulatory fit effect has merit under diverse conditions that may elicit emotionally defensive responses and impair dedicated information processing. In the context of an anti-drinking health campaign, the current project mainly investigates how the level of fear presented in tailored messages influences people's attitudes and behaviors. While fear appeals are one of the most dominant techniques found in health-related PSAs that evoke several emotional responses, and tailored messages are now frequently adopted in health communications (Cohen, Shumate, & Gold, 2007; Rimal & Adkins, 2003), no empirical studies have reflected the possible role of moderators (i.e., a level of fear) in the relationship between message matching and persuasion. This study is therefore an initial examination of investigating the possibility of variance in terms of the regulatory fit's effectiveness under different levels of fear. This study particularly aims to extend the traditional view of regulatory fit's effects as well as to propose practical applications for the creation of more effective, tailored health-related messages in order to persuade message recipients.

This study targets college students and investigates the topic of excessive alcohol consumption which relates to college students' everyday lives. Such research deserves

maximum attention so that campaigns will be more successful. According to Wechsler and his colleagues, approximately half of college students aged 18-24 consume alcohol in the pattern of binge drinking, defined generally as “consuming more than four drinks in one setting during the past two weeks,” and that students in this age group engage in binge drinking at a higher rate than any other demographic segment (Wechsler et al., 2002; Wechsler & Nelson, 2008). Perhaps more disturbingly, the surveys have revealed that 42.2% of college students consumed alcohol until getting drunk, and 15.6% of students considered themselves to be heavy drinkers (The Substance Abuse and Mental Health Services Administration, 2011). In addition, information from the *Center for Science in the Public Interest* (2001) indicates that college students are spending more of their income on alcohol and spending much less on class-related materials.

For decades, abusing alcohol has been one of the most challenging problems with which most colleges are concerned (Lin & Carlson, 2009) due to its negative consequences, such as traffic accidents, illness, and poor academic performance (Hanson & Engs, 1992; Presley, Meilman, & Lysterla, 1993; Wechsler, Davenport, Dowdall, Moeykens, & Castillo, 1994). According to information from the *Journal of Studies on Alcohol and Drugs* in 2009, more than 1,825 college students lost their lives, and nearly 600,000 students had physical injuries or experienced sexual assault in relation to overusing alcohol (Hingson, et al., 2009). Other statistics showed that nearly 700,000 of reported assault as well as 97,000 of sexual violence on campuses are associated with alcohol consumption (Hingson, et al., 2009). Despite the existence of numerous and varied alcohol abuse prevention campaigns, campaign planners still have a hard time devising effective strategies to persuade young adults who do not generally realize the serious consequences of binge drinking, and as such, pay little attention to the messages (Cohen

et al., 2007; Engs & Hanson, 1989; Pilling & Brannon, 2007). Since a regulatory fit effect often occurs regardless of a message's relevance to individuals' interests or involvement in the issue (Aaker & Lee, 2006; Cesario et al., 2004; Wang & Lee, 2006), this study provides several practical implications that could be helpful in improving current strategies for anti-drinking campaigns.

On the basis of the literature regarding fear appeals, the researcher conducted this investigation under the assumption that people have a tendency to skip important messages or to deny the messages' relevance when they were overwhelmed, owing to feelings of high fear from the presented messages. Although both regulatory fit and fear appeals can individually strengthen positive effects on persuasion respectively, the relative effectiveness of such strategies may weaken or even disappear when these two factors are combined in one message or appeal due to people's tendency to avoid processing messages under conditions of high fear. To date, there are no formal expectations regarding such an interaction effect between tailored messages and fear appeal campaigns. Consequently, campaign developers and advertisers have paid much attention to creating tailored messages that follow individuals' unique states in order to get their attention regardless of the possibility that a certain mixture of message attributes may diminish a tailored message's effectiveness (Rimal & Adkins, 2003; Rimal & Flora, 1997). In this vein, my research can provide a general guideline for campaign designers who attempt to improve the effectiveness of their campaign messages. For instance, when health-related organizations or agencies are planning to implement the tailored messages in anti-smoking campaigns, the current research findings can suggest how to create the tailored messages through the fit between message frame and an individual's regulatory focus as well as what levels of fear appeals are appropriate for the persuasive effectiveness of the messages. Moreover, this study can contribute

to the discussion of tailored communication by adding the merit to use regulatory fit and to enhance our understanding of regulatory focus as they target the unique traits of individuals.

In this light, this project's first goal is to explore the effect of fear-arousing content in the tailored messages on persuasion. Using an experimental research design, this study manipulated televised PSAs' fear levels as well as message compatibility to fit individuals' regulatory focus. Since health-oriented advertisements primarily use visuals or text to scare and to motivate people to change unhealthy behaviors (Wong & Cappella, 2009), it is important to investigate whether the positive effect of regulatory fit on persuasion holds for video-oriented messages, which deliver the combination of textual, visual, and auditory elements that boost the feelings of fears.

The second objective of this study explores whether there are some possible variables that mediate the regulatory fit's effects on persuasion. In comparison to previous studies, this study investigates how people process a tailored message that contains fear appeals. In particular, the researcher examines the role of diverse perspectives of message elaboration (e.g., thought lists) and defensive responses (e.g., perceptions of personal relevance with the message) as potential mediators, which may lead to people's attitudes or behavioral changes. Importantly, the researcher added one more method, *secondary task reaction time (STRT)*, to estimate how participants allocate their cognitive resources to encode the message during message exposure. Theoretically, the researcher expects to broaden communication scholars and practitioners' knowledge of what happens if there are underlying processes that conflict with conditions that promote systematic information processing (i.e., condition of regulatory fit) and conditions that may inhibit extensive message processing (i.e., high level of fear).

Finally, I aim to propose a model that may explain an increase or a decrease of the regulatory fit effects on persuasion. If there is a relationship between possible mediating

variables and people's attitudes toward binge drinking and behavioral intentions, it is possible to suggest the underlying processes that link regulatory fit and persuasion.

Taken together, this study is expected to answer some remaining questions in the area of tailored communication, such as how message elaboration and emotional responses under highly emotional circumstances can influence the tailored message's effectiveness. From the findings of this dissertation, I intend to suggest various strategies for health communications and marketing practitioners who are willing to use effective message strategies to persuade their publics.

CHAPTER 2: LITERATURE REVIEW

Alcohol Overuse and Campaigns against Binge Drinking

The following sections review the problem of binge drinking on college campuses and the negative effects of such excessive drinking. In addition, the literature review provides an understanding of the limitations of current anti-binge drinking campaigns, which have been produced to prevent an increase of excessive drinking rates. Ultimately this literature review suggests how to enhance college students' attention to such campaigns and change their current drinking habits.

Prevalence of excessive alcohol drinking on college campuses. The high amount of alcohol consumption among college students and its adverse outcomes is not a new phenomenon (Hingson, Heeren, Winter, & Wechsler, 2005; Hingson, Zha, Witzman, 2009). A series of survey results from the *Harvard School of Public Health College Alcohol Studies* indicate that a relatively higher rate of alcohol consumption on campuses has been stable over the past few decades, even with an increase in anti- drinking public health campaigns (Wechsle &, Nelson, 2008).

Some researchers have pointed out that the steady increase of binge drinking among college students is associated with easy access to alcohol and social norms that encourage overuse of alcohol (Wechsler & Kuo, 2000; Wolburg, 2001). In particular, a considerable number of college students tend to have misperceptions about their peers' general alcohol consumption; that heavy or frequent drinkers often overestimate other students' alcohol drinking and perceive excessive drinking as a kind of normal trend (Campo et al., 2003; Haines & Spear, 1996; Wechsler & Kuo, 2002). Many scholars have been concerned about this myth among students because the misperception of unhealthy behaviors can cause a higher increase in such

behaviors among even heavy drinkers (Campo et al, 2003; Clapp & McConnell, 2000; Thombs, Wolcott, & Farkash, 1997). To correct this biased perception, several colleges have frequently adopted *social norms campaigns* that aim to deliver accurate information about typical college students' drinking behaviors (Thombs et al., 1997; Wechsler et al., 2003). For instance, while a large number of Florida State University (FSU) students evaluated binge drinking is a common phenomenon among FSU students, survey results have shown that the majority of FSU students practice more healthy behaviors. Thus, FSU launched the *Real Project* (<http://www.therealproject.fsu.edu>), a campaign that informed the FSU community about the actual, widespread responsible consumption of alcohol, and eventually corrected perception of campus-drinking norms (Jung, Fitzgerald, & Wang, 2005). However, this is only one of few campaigns that were successful in reducing the rate of alcohol abuse. Several social norm campaign approaches have achieved only limited success in lowering students' alcohol consumption at colleges, as well as at the national level (Meador, 2003; Thombs et al., 1997; Wechsler et al., 2003).

Binge drinking and the need for effective campaigns. While most students do not consider the consequences of drinking as long as their experience of consuming alcohol is fun and enjoyable, its consequences are much worse than people usually assume (Wechsler et al., 1995). Likewise, the high relationship between excessive drinking and poor academic performance, aggressive behavior, criminal behavior, and unexpected sexual activities indicates the importance of continuous and effective drinking prevention campaigns on college campuses across the U.S. (Hanson & Engs, 1992; Hingson et al., 2002; Wechsler et al., 2002). For these reasons, more colleges are implementing strategic and persuasive health promotion programs that can help change the current culture of binge drinking to effectively reduce the serious

consequences of drinking on campuses and strengthen their students' health and academic performance (O'Sullivan, 2001; Wechsler et al., 1994). In comparison to the frequent use of social norm campaigns, fear appeals seem to be a less popular theme in anti-drinking campaigns; however, informing as well as warning students about the abovementioned serious negative consequences of drinking can possibly increase students' attention to the issue and influence their attitudes and behaviors regarding alcohol use. This possibility stems from the fact that fear appeals have been moderately effective in promoting several other health-related issues, such as AIDS prevention (Boster & Mongeau, 1984; Dillard, 1994; Hill, 1988).

Considering the effectiveness of anti-drinking campaigns, Pilling and Brannon (2007) argue that previous campaign strategies have not been persuasive enough at reducing alcohol consumption because such campaigns often used too generalized messages that may weaken students' perceptions of personal relevance to the issue. For instance, mass mediated public service announcements (PSAs) targeting mass audiences have been used to inform general audiences on alcohol-related issues (Bator & Cialdini, 2000). Although PSAs employ persuasive advertising techniques that aims generally to inform the mass public to be aware of certain topics, some scholars emphasize the need to tailor the messages used in these advertisements so that they relate to individuals' interests in order to achieve the campaign's goals (Rimal & Adkins, 2003). Tailored messages generally contain information that relates to receivers' concerns, interests, and motivations on the basis of individual assessments (Kreuter, Farrell, Olevitch, & Brennan, 2000). Scholars have found tailored communication to be more effective than generic messages in that the former increases individuals' attention, memory, and perception of the message's trustworthiness (Rimal & Adkins, 2003). For example, in the context of anti-binge drinking campaigns, participants who are exposed to personalized messages that contain their

specific fears about the consequences of alcohol consumption (e.g., getting injured) and subsequent reasons as to why they should change their drinking behaviors were more likely to reduce their own consumption of alcohol (Miller, Sovereign, & Krege, 1988). As such, when a message contains more personalized information, rather than generalized information that applies to all, the message seems to be more effective at enhancing the campaign's effectiveness. Hence, an analytic understanding of the effects of tailoring PSAs that follows individuals' certain interests or goals is meaningful to develop more persuasive health-related campaigns.

Framing Messages in Health Communication

The following sections review the way to frame messages in health communication and framing's effectiveness on attitude and behavioral changes. This section of the literature review then discusses the way in which to best create targeted messages by considering an individual's motivational goals (i.e., regulatory focus) to result in greater persuasive effectiveness.

Theoretical foundation: An aspect of message framing. *Framing* has been frequently used to present multiple meanings in the area of mass media studies, health communication, and beyond. In general, framing refers to the ways in which rationally similar options are illustrated in a different manner (e.g., 10% chance of win vs. 90% chances of loss) (Kahneman & Tversky, 1979; Tversky & Kahneman, 1981). In fact, scholars have demonstrated that message recipients tend to think about the situation in a particular way, depending on how a situation is described in words (Scheufele, 2000). Somewhat differently, mass communication researchers have defined framing as a main establishing idea that provides a primary contextual meaning and creates meaningful associations among information (Gamson, 1992; Price & Tewksbury, 1997). For example, journalists and persuaders can present the problems of alcohol abuse as either a social issue by placing it within a larger social context, or solely as an individual's problem, which

makes audiences perceive the cause of binge drinking in a way that corresponds to the provided frame. In this way, framing has been used as a broad concept that represents general effects of mass media as well as the power of wording and structuring an idea (Price, Tewksbury, & Powers, 1997).

As many studies on framing have utilized the term in various ways, researchers in health communication have generally discussed framing as an aspect of messages that conveys the same information but underscores either disadvantages or advantages. Prospect theory demonstrates the importance of considering a message trait because people are sensitive to whether the information is presented in a form of gains or losses when they make a decision (Tversky & Kahneman, 1981). In particular, the main assumption of prospect theory posits that when the predominant benefits from a decision are presented, individuals tend to be risk averse and pursue a sure outcome. In contrast, when individuals are exposed to domains of potential losses, they tend to prefer risks and even take risky actions to minimize losses (Tversky & Kahneman, 1981; Steward, Schneider, Pizarro, & Salovey, 2003). In the area of health communication and persuasion, message framing is therefore mainly defined as “a technique by which risk is expressed using either positively or negatively sided content to shape the perceptions about behavioral outcomes as either the gains to be obtained with the adoption of the behavior or the losses to be suffered with nonadoption” (Cho & Boster, 2008, p. 429). Obviously, the consequences of adopting healthy behaviors or abandoning unhealthy behaviors are presented in terms of gain framing or loss framing to promote public health issues (Edwards et al., 2001; Rothman & Salovey, 1997).

As the definition of message framing shows, constructing gain and loss framed messages is similar because these messages eventually advocate the same healthy behavior; however, it is

also different because these messages underscore the consequences of either compliance or non-compliance with a certain behavior. In detail, a *gain frame* highlights the benefits of taking certain actions, such as “if you perform the recommended behavior, you will have the benefits or you will prevent the disadvantages.” In contrast, a *loss frame* emphasizes the undesirable outcomes of failing to adopt these actions, such as “if you don’t follow the recommended behavior, you will suffer from the disadvantage or you can not enjoy the benefits” (Cho & Boster, 2008; Stephenson & Witte, 2000). In terms of message framing’s effectiveness, scholars have interestingly found that even simply emphasizing a certain end state (i.e., gains vs. losses) can lead to relatively strong effects under certain circumstances (Block & Keller, 1995; Keller et al., 2003; Maheswaran & Meyers-Levy, 1990; Meyers-Levy & Maheswaran, 2004; Rothman et al., 1999; Turner, 2004).

The relative effectiveness of gain versus loss framing. Despite the similar logic underlying the gain frame and loss frame, research on message framing in health communication has provided inconsistent findings across different kinds of health-related behaviors and among message recipients. For that reason, several investigators have pursued these factors’ relevance to understand how the presentation of health-related messages can influence people’s intention to practice the healthy behaviors that are advocated (Rothman & Salovey 1997; Rothman, Bartels, Wlaschin, & Salovey, 2006).

The main works of Rothman and Salovey (1997) suggest that health relevant situations are mostly connected to the relative effectiveness of gain-framing and loss-framing (Rothman & Salovey, 1997; Rothman et al., 1999, 2006). Scholars especially emphasize that whether a certain health-related behavior is perceived as an action of risk seeking or risk aversion can influence message reception. In general, health-related issues have been classified in two different

dimensions, *detection* or *prevention* (Rothman & Salovey, 1997). In particular, the function of detection behavior (e.g., HIV testing and breast self-examination) is finding the presence of current health problems in order to treat them. Consequently, detection behaviors are considered a risk seeking action, so that presenting the disadvantages of not following the recommendation is perceived as more effective for persuasion (Kalichman & Coley, 1995; Meyerowitz & Chaiken, 1987; Rothman et al., 1999). In contrast, prevention behaviors (e.g., sunscreen and condom use) involve reducing potential health risks. Thereby, presenting the advantages of performing the recommended health behaviors (i.e., gain-framing) is more persuasive in promoting these behaviors (Detweiler, Bedell, Salovey, Pronin, & Rothman, 1999; Schneider et al., 2001; Steward et al., 2003; Rothman et al., 1999).

Even though the majority of studies on framing health messages suggest the positive effects of the match between framing and health issues (Rothman & Salovey, 1997; Schneider et al., 2001), O’Keefe and Jensen (2006) pointed out another possibility, in which the success of framing is contingent upon other factors that also encourage individuals’ intention to process the message. There is little doubt that perceptions of the same targeted health behaviors can vary according to individuals’ characteristics (Mann et al., 2004; Meyers-Levy & Maheswaran, 2004). For instance, several teams of researchers have demonstrated that if individuals perceive susceptibility to a certain health risk presented in the message, a loss frame is found to be more effective at influencing behavioral changes (Block & Keller, 1995; Maheswaran & Meyers-Levy, 1990). Conversely, the same studies found that a gain frame is more effective for individuals who perceive a low susceptibility to the health risk. Likewise, the number of individual characteristics (e.g., the perception of risk, issue involvement, and self-efficacy) can make a

person prefer a particular message frame that underscores either negative or positive aspects of the circumstances (Higgins, 2000).

In this light, O’Keefe and Jensen’s (2006) review of 93 framing studies suggests that either gain or loss framing itself does not evoke a significantly strong effect on the adoption of the suggested behavior. Rather, as Latimer, Salovey, and Rothman (2007) argue, framing effects should be examined along with individuals’ dispositional factors or situational factors, since several studies have consistently found that these variables can potentially moderate message framing’s effects. In fact, several researchers have recently argued that individuals have a different sensitivity to information that contains either favorable or unfavorable outcomes, so that it influences their evaluations of gain and loss framed messages (Cesario et al., 2004; Higgins, 1999; Lee & Aaker, 2004; Mann et al., 2004). For example, individuals who receive a message frame that is congruent with their preexisting or primed goals tend to be more effectively persuaded by the message than individuals who receive a message frame that is incongruent with their current interests (Mann et al., 2004; Sherman, Mann, & Updegraff, 2006).

The main conclusion drawn from here is that using a particular message frame does not always guarantee positive effects on healthy behavioral practices. For that reason, scholars underscore the importance of developing messages that are tailored to individuals’ characteristics and examining several potential factors that could make a certain message frame more convincing and persuasive than others to motivate people to change their own behaviors (e.g., Higgins, 1997; Lee & Aaker, 2004).

Matching Message Framing to Regulatory Focus

As for primary individuals’ characteristics, this study focused on the variability in people’s motivational goals (i.e., a promotion focus vs. a prevention focus), which influences

their preference to attain a certain outcome (Higgins, 1997). The following sections provide the relationship between individuals' regulatory focus and message frame as well as the effects of regulatory fit on persuasion.

Unique motivational orientations: Regulatory focus. Regulatory focus theory proposes a novel perspective to psychology, health communication, marketing, and other areas by explaining individuals' diverse mental processes and predicting their subsequent behaviors. According to regulatory focus theory, individuals are more likely to prefer a certain way to achieve desirable outcomes or a certain message frame as a result of their unique *motivational goals* (Higgins, 1996, 1997). Motivational goals (interchangeable use with *motivational system* or a *regulatory focus*) generally refer to "representational structures that guide the system in its pursuit of a reference or end state" (Markman & Brendl 2000, p. 98).

Originating from Higgins' (1987) discussion, a key assumption underlying regulatory focus theory is that people tend to have one of the two chronic forms of regulatory focus, namely more promotion-oriented goals or more prevention-oriented goals, as a result of their socialization (Higgins, 2002; Higgins et al., 1994). Higgins (1997, 2002) explained that the parents' style of nurturing during a person's childhood could influence his/her continued interests or concerns (i.e., regulatory focus) about how to survive in society. In addition to the characteristics of individuals' chronic motivational goals, several researchers have also found that certain tasks (e.g., writing an essay or reading information that is either gain or loss framed) can temporarily induce people's susceptibility to a particular motivational orientation, even though they have previously chronically functioned with a certain motivational system as the result of their socialization (Avnet & Higgins, 2006; Crowe & Higgins, 1997; Higgins, 1997, 1998, 2000; Higgins et al., 1994; Wang & Lee, 2006).

Basically, consistent with the hedonic principle, individuals with a promotion focus are highly motivated to achieve “pleasure,” whereas individuals with a prevention focus want to avoid “pain” (Higgins, 1996). Going into details, individuals with a promotion focus are concerned with “advancement” and “growth” (Crowe & Higgins, 1997, p. 117); therefore, they have a strong eagerness to obtain positive endings as often as possible. Stated differently, promotion-oriented individuals care much about how to achieve positive outcomes and minimize the loss of desirable outcomes (Higgins et al., 2001). As opposed to promotion-focused individuals, those with a prevention focus make an effort to avoid attaining negative results and try to minimize their losses (Higgins, 1997). Typically, these individuals have a strong inclination to pursue a goal that is perceived as an “obligation” or “responsibility,” which will allow them to attain “safety” and “security” (Crowe & Higgins, 1997, p. 120). As a result, these individuals tend to be sensitive to occasions wherein they experience undesirable outcomes. For example, students with a promotion focus perceive the goal of earning an A grade as *personal growth* and *advancement* (Hong & Lee, 2008); therefore, they may read more articles beyond the textbooks (i.e., eagerness strategies) to approach the desirable consequences. In contrast, students with a prevention focus consider this goal to be a *personal responsibility*, so that they may complete all course requirements (i.e., vigilance strategies) to avoid the undesirable results of a lower grade (Cesario et al., 2004; Idson et al., 2000). In such a way, individuals with a distinct regulatory orientation are inclined to prefer certain strategies to achieve their motivational goals (Higgins, 2000).

Regulatory focus’s relevance to message framing. Higgins (1987, 2000) indicates that the concept of loss framing and gain framing is associated with motivational goals (i.e., the *regulatory focus*) in that both seek ideal endings. Specifically, the gain framing is similar in

temperament to promotion-focus, and the loss framing has much in common with prevention-focus (Higgins, 1998). In the case of a person with a promotion focus, he or she is more likely to consider diverse options to achieve “the pleasurable presence of positive outcomes (e.g., gains) and the painful absence of positive outcomes (e.g., non-gains)” (Higgins, 2002; Higgins et al., 2001, p. 4); therefore, people with a promotion focus are likely to attain gains. In relation to message framing, gain framing, which emphasizes desirable outcomes, is therefore associated more with a promotion focus. In contrast, a person with a prevention focus tends to consider options for maintaining the status quo; therefore, they have a tendency to avoid losses (Higgins, 2002). Taking regulatory focus theory and message framing discussion into consideration, loss framing is more compatible with prevention-oriented regulation because it concerns “the painful presence of negative outcomes (e.g., losses) and the pleasurable absence of negative outcomes (e.g., non-losses)” (Higgins et al., 2001, p. 4).

Consistent with this prediction, when exposing subjects to a message that underscores the positive outcomes of dental flossing (e.g., dental flossing may improve the health of your teeth), such gain appeals were more persuasive to people with a promotion focus because they are more willing to engage in strategic activities (e.g., flossing to strengthen their dental health) to attain positive outcomes. In contrast, people with a prevention focus prefer to engage in vigilance strategies (e.g., avoiding potential dangers of not flossing through fulfilling the minimum requirement of flossing) to avoid negative outcomes, so that loss appeals that emphasized negative results of not flossing (e.g., no performance of dental flossing may weaken the health of your teeth) were more appealing (Mann et al., 2004; Updegraff et al., 2007).

Much of the work in this area has also indicated that more detailed matches between message frames and regulatory focus is necessary to avoid confounds and generate more

pleasurable outcomes (Higgins, 1998, 2002). In terms of message frame's operationalization, scholars indicate that difference exists in a given message frame, such as whether favorable outcomes are reached or not as well as whether the unfavorable outcomes are avoided or not (Aaker & Lee, 2004; Idson et al., 2000). Consistent with this operationalization, a gain frame in health communication is operationalized as presenting either the presence of benefits or the absence of negative outcomes by adopting recommended behaviors. Considering the difference between the two regulatory focuses, the former is well-matched with a promotion focus because it is associated with "the pleasurable presence of positive outcomes," and the latter suits a prevention focus because it relates to "the pleasurable absence of negative outcomes" (Higgins et al., 2001, p. 4). In fact, since a promotion focus considers achieving the maximum amount of goals as a success, presenting *gains from compliance* can strengthen the pleasure of success, more so than *non-losses* (Nan, 2007). In a similar vein, presenting *a loss from noncompliance* is more effective for people with a prevention focus because they are mainly concerned with "the painful presence of negative outcomes," rather than "the painful absence of positive outcomes" (Higgins, 1998, 2002).

Taken together, a closer look at the literature offers some insight into the importance of regulatory focus' relevance to message framing because of its effects on some subsequent consequences. Relatedly, a regulatory focus influences not only individuals' sensitivity toward a certain ending (Aaker & Lee, 2001), but also their evaluations about the value of decisions (Camacho, Higgins, & Luger, 2003; Higgins et al., 2003) and even their experience of certain feelings (Higgins, 1998; Idson, Liberman, & Higgins, 2000). Particularly, individuals' openness to a message that is well-suited to their regulatory focus indicates that considering the fit between individuals' regulatory focus and message framing can be an effective way to enhance

persuasion. As it is becoming more common for researchers to expect positive outcomes from *message matching* (Aaker & Lee, 2004; Cesario et al., 2004; Higgins et al., 2003, 2004; Mann et al., 2004; Lee & Aaker, 2004), it is also very important to understand what circumstances define a match (i.e., regulatory fit), how message matching influences subsequent outcomes, and what underlying mechanisms lead to the message's persuasive effects.

| | | <i>Message Frame</i> | |
|-------------------------|---|---|--|
| | | Gain Frame | Loss Frame |
| Regulatory Focus | Promotion Focus (sensitivity to the positive outcomes) | Presence of positive outcomes due to compliance | Absence of positive outcomes due to noncompliance |
| | Prevention Focus (sensitivity to the negative outcomes) | Absence of negative outcomes due to compliance | Presence of negative outcomes due to noncompliance |

Figure 1. The Relationship Between Message Frame and Regulatory Focus

Note. From “Motivational Compatibility and the Role of Anticipated Feelings in Positively Valenced Persuasive Message Framing,” by S. Yi and H. Baumgartner, 2008, *Psychology and Marketing*, 25, p. 1008. The content of original figure was modified to show the relationship between message frames and regulatory focus.

Regulatory fit: Persuasion from feeling right. Regulatory focus theory proposes that a chronic or a temporally primed regulatory focus from a situation elicits a unique preference of the strategy to use to reach a motivational goal (Higgins, 1997, 2000). According to regulatory focus theory, when a person engages in strategic activities that support his or her motivational goal, he or she experiences *a regulatory fit* (Aaker & Lee, 2006, p. 15; Higgins, 2000). Since the individuals' experience of the fit makes them “feel right” about what they participate in, and this

valued-experience enhances their motivation to perform the target behaviors, recent studies have examined ways to manipulate more compatible conditions as well as their persuasive effectiveness in diverse contexts (Aaker & Lee, 2006; Higgins, 2000; Higgins et al., 2003; Zhao & Pechmann, 2007).

A review of previous studies of regulatory focus showed several ways to operationalize the regulatory fit condition (Aaker & Lee, 2006). In one group of studies, scholars created the regulatory fit condition by underscoring desirable outcomes that matched the participants' regulatory focus (Higgins et al., 2003; Idson et al., 2000; Lee & Aaker, 2004). As the discussion of regulatory focus showed, promotion focused individuals are more sensitive to whether the desirable outcomes are accomplished or not (i.e., gains and non-gains), whereas prevention focused individuals care more about whether the undesirable outcomes are avoided or not (i.e., losses and non-losses) (Higgins, 1997, 1998). Consistent with this stance, one of the widely acknowledged and frequently used methods to elicit the fit is creating the match between the frame of a persuasive message and individuals' regulatory focus (Cesario et al., 2004; Latimer et al., 2008; Spiegel et al., 2004). For example, after priming participants with either a promotion goal or a prevention goal stimulus by showing advertisements (e.g., "drink black soybean milk to promote your growth" for a promotion focus; "drink black soybean milk to protect to you from disease" for a prevention focus), the researcher, created the regulatory fit experience by presenting information framed as gains for promotion-focused participants (e.g., "if you do not smoke, you can obtain positive results") and losses for prevention-focused participants (e.g., "if you do smoke, you cannot avoid negative outcomes") (Kim, 2006, p.145). Similarly, Higgins and colleagues' (2003) study manipulated the condition of the fit by asking participants to choose a cup after thinking about gains from their decision of buying the cup, for instance. From

the same instruction, both the fit and the nonfit are simulated for participants according to their chronic regulatory focus. This is a particularly compatible strategy for promotion-oriented participants (i.e., a condition of fit) as well as an incompatible strategy for prevention-oriented participants (i.e., a condition of nonfit).

On the other hand, researchers somewhat differently manipulated the fit condition by making participants become involved with either feelings-based decision-making processes or reason-based processes that are related to their regulatory focus (Avnet & Higgins, 2006, 2003). This manipulation is from the notion that individuals with a certain regulatory focus have a different preference for decision-making strategies (Avnet & Higgins, 2006; Pham & Avenet, 2004). For instance, Avnet and Higgins (2006) found regulatory fit effects when researchers instructed promotion-oriented participants to evaluate a certain brand on the basis of their affective responses toward the brand, and prevention-focused participants assessed the brand in terms of reasons. In these ways, several teams of researchers have used various processes to achieve regulatory fit, such as by making participants engage in certain actions, exposing them to a particular message frame, and involving them in decision-making processes that were either consistent or inconsistent with their motivational goals.

To date, the regulatory fit influences perceived value in a number of ways. Some researchers have empirically found that people tend to place higher value on their choice of an object and perceive higher confidence in their decision-making under the fit condition (Freitas & Higgins, 2002; Freitas, Liberman, & Higgins, 2002; Higgins, 2000). Higgins and colleagues (2003) found interesting results, such that promotion-oriented participants were willing to pay more for the same object if they were asked to think about the gains from choosing the object, rather than thinking about the losses from not choosing the object. Notably, researchers have also

found a high preference for and involvement in the targeted health-related behaviors, such as in increasing fruit and vegetable consumption (Higgins et al., 1994; Latimer et al., 2004; Spiegel et al., 2004) and flossing (Mann et al., 2004), under the condition of the fit. Empirically, Spiegel and colleagues' (2004) report showed that participants who received messages that highlighted the consumption of fruits and vegetables as the message that was tailored to their regulatory focus showed a greater increase in their fruit and vegetable consumption than participants who were under the non-fit condition. Regarding regulatory fit messages, the benefits achieved from eating fruits and vegetables were used for promotion-oriented participants, and the costs of not eating fruits and vegetables were adopted for prevention-oriented participants.

Similarly, evidence from laboratory-based experiments indicates that regulatory fit also strengthens individuals' evaluations or attitudes toward certain behaviors or objects more intensely, such as when a positive evaluation of desirable choices tends to become even more positive (Avnet & Higgins, 2006; Ceasrio et al., 2002; Higgins, 2002; Higgins et al., 2003). Moreover, individuals' perceived message persuasiveness became stronger and message processing became more fluent under the fit condition (Labroo & Lee, 2006; Lee & Aaker, 2004; Lin, 2008; Zhao & Pechmann, 2007). In recent studies, researchers have found that when promotion-focused participants were exposed to promotion-oriented themes (e.g., "creating a healthy body"), they processed the gain-framed messages (e.g., "highlighting the benefits of drinking grape juice") much better and evaluated these messages as more persuasive than the loss-framing messages, for instance (Lee & Aaker, 2004, p. 207). The same studies, of course, showed that a similar pattern of preference for loss-framing (e.g., "highlighting the unfavorable outcomes from not drinking juice") is elicited for prevention-focused participants in a prevention-oriented theme (e.g., "preventing cancer and heart disease").

As the body of regulatory fit research continues to grow, a handful of studies have also paid attention to the issue of what underlying mechanisms intensify persuasive effectiveness (Avnet & Higgins, 2006, Higgins, 1998, 2002; Higgins et al., 2003; Zhao & Pechmann, 2007). One of the main components that lead the fit's effectiveness is the "*feeling right*" experience that intensifies "the value of what a person is doing" and tends to transfer to subsequent experiences (Cesario et al., 2004, p. 389). In relation to the message, the "feeling of rightness" could be transferred to individuals' perception of the message or their position on the topic in the message, such that this information can be used as the relevant means to intensify the confidence in their responses and judgments (Aaker & Lee, 2001, 2006; Avnet & Higgins, 2006; Higgins, 2000; Higgins et al., 2003; Lee & Aaker, 2004). Scholars have indicated that the reason "value from fit" can be transferred to persuasion in the above-mentioned way is because individuals are confused about where "the feeling of rightness" comes from. Consequently, people under high-fit circumstances simply misattribute their feelings to subsequent judgments and decisions (Cesario et al, 2004, p. 389; Higgins et al, 2003).

Evidence from several studies on regulatory fit suggests that this "feeling of rightness" influences message processing in such a way that more fluent and elaborated message processing is elicited (Aaker & Lee, 2004; Higgins, 2002; Lee & Aaker, 2004). Lee and Aaker (2004) argue that the compatibility effect on persuasion is evoked by an increase in confidence about message processing and understanding of the message. Similarly, Aaker and Lee (2001) find that participants who experienced a regulatory fit were able to recall more information and discern the quality of arguments through the systematic processing of information. Although it is possible that individuals tend to become involved in the more peripheral processes of even compatible messages when they are under time pressure or performing cognitively

overwhelming tasks (Briley & Aaker, 2006), more researchers have proposed the possibility that an increase of motivation and engagement in activities under the fit implies more effortful information processing. Higgins (1998) especially emphasizes the association between regulatory focus theory and the information-processing variables in the dual process models of persuasion (i.e., Elaboration Likelihood Model: ELM).

As a general principle, the ELM explains how message receivers' motivations and abilities vary their likelihood of message elaboration, which leads to distinctive message processing (Petty & Cacioppo, 1986). The term *elaboration likelihood* refers to "the extent to which a person thinks about the issue-related arguments contained in a message" (p. 128). According to the ELM, when people are motivated to engage in elaboration or are capable of carefully thinking about the information, persuasion can occur via *the central route* that involves more dedicated and extensive information-processing, as well as careful examination of the quality of the arguments.

Among several variables that strengthen motivations and abilities, Higgins (1998) especially indicates that *personal relevance* is the most important and influential determinant of motivations because it directly relates to "the importance of the issue or topic and its consequences to the recipient" (p. 522). Put differently, when individuals perceive that a certain message personally relates to them, they tend to become highly motivated so that they are more likely to think carefully about the merits of the messages presented. Applying this notion to the regulatory fit, since the same issues with the same consequences can be framed either as a promotion focus or a prevention focus, it is reasonable to expect that a message can be perceived as more personally relevant if it is compatible with individuals' motivational goal. Zhao & Pechmann (2007) empirically supported the presumption that regulatory fit leads to more

enhanced advertisement effectiveness because a message frame that is more compatible with individuals' regulatory focus is perceived as more relevant and useful for attaining their personal goals, for instance. Also, participants who experienced regulatory fit thought of additional arguments in support of the messages, and reported more long-lasting behavioral changes (Aaker & Lee, 2001; Mann et al., 2004; Updegraff et al., 2007).). Likewise, the ELM allows for the possibility that the regulatory fit can enhance motivation through enhanced personal relevance, which leads to the more systematic processing of information as well as building relatively resistant and long-term attitude and behavior changes (Petty & Cacioppo, 1986).

So far, there is a long research tradition in regulatory focus that predominantly paid attention to the positive effects of cognitive matches versus mismatches on information processing and persuasion (Aaker & Lee, 2001; Avent & Higgins, 2006; Lee & Aaker, 2004; Mann et al., 2004). However, none of the previous studies describes whether or not a certain persuasive context can make people avoid effortful processing of information even under the fit condition. In the case of advertising (e.g., PSAs), the attributes of advertising are as important as the message itself, because message receivers' responses toward advertising are strongly influenced by those attributes, which in turn impacts the effectiveness of advertising (Brown & Stayman, 1992; Mitchell & Olson, 1981). To some extent, scholars have indicated that a certain threat attribute in messages can evoke the feeling of fear, which makes people perceive the information as more valuable and encourage them adopt the recommended behaviors (Bagozzi, Gopinath, & Nyer, 1999). However, recent studies underscore the likelihood that the effect of message attributes (e.g., content that presents negative outcomes of unhealthy behavior; aversive stimulus) lessens systematic information processing (Leshner, Bolls, & Thomas, 2009; Leshner, Vultee, Bolls, & Moore, 2010). Leshner and his colleagues (2009) demonstrated that participants

did not allocate cognitive resources for encoding the message if it contained fear appeals. Similarly, in response to aversively fearful content, participants initially showed *defensive tendencies*, which impair their ability to retrieve presented information in the advertising (Bradley & Lang, 2000).

In summation, it is reasonable to expect that an individual's message acceptance and persuasion is not only influenced by the perception of message effectiveness from an experience of fit, but also by certain defensive tendencies in response to specific message attributes (i.e., fear appeals). In this light, it is important to explore how the intensity of fit effects would be under various levels of fear appeals within a current regulatory fit study frame.

Fear Appeals as the Potential Moderator

As one of the message attributes, this project focused on the effects of fear appeals in the processing of messages that fit with individuals' regulatory focus. The following sections indicate how fear appeals influence information processing as well as how defensive tendencies from feeling of fears impact individuals' attitudes and behaviors.

The effects of fear in information processing and persuasion. Fear appeals have been popularly used to enhance message effectiveness in health-related campaigns (Cohen et al., 2007). The term *fear appeals*, which has been used interchangeably with threat appeals, are generally defined as “[persuasive] messages that emphasize the harmful physical or social consequences of failing to comply with message recommendation” (Hale, Lemieux, & Mongeau, 1995, p. 459; Witte, 1992, 1994) in health communications. Because fear appeals include “gruesome content in the form of vivid language [such as personalized language]” (Witte, 1992, p. 331), audiences express their aroused fear emotionally and physiologically. For instance, their verbal self-reporting of fears in the manipulation checks implies “the amount of fear aroused and

experienced by the audience” (Witte, 1992, p. 331). In addition, scholars found that high fear content evokes a faster heart rate and greater skin sweatiness than lower fear content (Mewborn & Rogers, 1979). In general, high-fear appeals illustrate the seriousness of unhealthy behavior (e.g., lung cancers that are caused by smoking) and its applicability to the audience in a psychologically arousing way through the combination of gory graphic images and text-based messages. It also provides a way to avert the threat effectively in the form of a recommendation (e.g., smoking cessation) (Witte, 1992, 1994). In the majority of health campaigns, loss and gain framing that focuses on threats of long-term as well as short-term health consequences have been widely used as a fear appeal to help youth better understand and process health-related campaign messages (Bauman, Brown, Bryan, Fisher, Padgett, & Sweeney, 1988; Cho & Boster, 2008; McKenna & Williams, 1993).

Up until now, an enormous amount of research has investigated fear appeals’ effectiveness on elaborating upon the messages and, furthermore, changing participants’ attitudes and behaviors across a variety of health contexts (Boster & Mongeau, 1984; Freimuth, Hammond, Edgar, & Monahan, 1990; King & Reid, 1990; Witte & Allen, 2000; Wong & Cappella, 2009). On one hand, scholars suggest that people use the feeling of fear as the cue to determine the intensity of information processing, so that audiences pay attention to a fear appeal more carefully and scrutinize it systematically (Bagozzi et al., 1999; Slavin, Batrouney, & Murphy, 2007; Tiedens & Linton, 2001). It is reasonable to expect that once audiences perceive a threat as personally relevant or significant, it may elicit anxiety and feelings of fear, as well as activate their motivation to carefully evaluate the threat’s seriousness (Easterling & Leventhal, 1989; Mewborn & Rogers, 1979). In the context of health communications, Chaiken and his colleagues (1989) found that fear appeals lead to more in-depth message processing, which in

turn led to higher intention to change behaviors. On the other hand, some studies underscore the possibility that using fear-arousing messages can cause less message processing and even make the healthy behavior less favorable under certain circumstances (Hovland, Janis, & Kelly, 1953; Janis & Feshbach, 1953; Keller & Block, 1999; Kohn, Goodstadt, Cook, Sheppard, & Chan, 1982; Witte, 1992, 1994). Because people have a tendency to maintain positive self-esteem by denying the possibility that such fearful consequence could happen to them, a counterproductive effect of high fear often occurs (Taubman-Ben-Ari, Mikulincer, Gillath, 2004). Some scholars have demonstrated that a certain amount of fear is needed to motivate people to change their attitudes and behaviors; however, it is also well-known that excessively high fear appeals make them resist accepting the message to protect their freedom to ponder an issue (Dillard & Shen, 2005). Considering these two contradictory perspectives related to the effect of fear appeal, it is important to examine how people process different fear-arousing messages as well as how the level of fear influences the messages' consequent persuasiveness.

One of the appropriate approaches to answering this question involves researchers' investigation into cognitive or emotional processing that undergirds the effectiveness of fear appeals (Hale et al., 2005; Wong & Cappella, 2009). Fear appeals are complicated messages that elicit diverse feelings (e.g., anger, guilty, and fear) and elaboration about the persuasive messages (e.g., relevant/irrelevant thoughts in relation to the issue) that may mediate the relationship between fear and persuasion (Dillard & Nabi, 2006; Dillard & Peck, 2001). In particular, health-related PSAs often attempt to boost the perception of certain health-related threats through the combination of "audiovisual information about a threat to one's health and negative graphic images" (Leshner et al., 2011, p. 77). Although it is very possible that this combination of message elements can intensify people's perception of threats, these

characteristics can also make them avoid cognitive processing, which in turn influences the degree of attitude changes (Cauberghe, De Pelsmacker, Janssens, & Dens, 2009; Leshner et al., 2011; Wong & Cappella, 2009). In this light, recent empirical works have investigated how the combination of message attributes can influence the processing of fearful messages (De Hoog, Stroebe, & De Wit, 2007). Some researchers find that fear can impair people's ability to think systematically, because fear appeals can reduce message elaboration, such as via defense mechanisms (Jepson & Chaiken, 1990; Witte, 1992). Responding to high fear-threatening messages, individuals' general defensive techniques are more likely to become activated, to get rid of unpleasant feelings from fears (Keller & Block, 1999). Scholars have defined *defensive avoidance* as "a motivated resistance to the messages" (Witte, 1992, p. 332) and operationalized it as the degree to which people avoid messages, pay selective attention to the messages, deny their personal relevance, and minimize the severity of the threat (Eagly & Chaiken, 1993; Hovland, et al., 1953; Janis & Feshbach, 1953; Janis & Mann, 1997; Rogers, 1983). In some instances, research findings confirmed these defensive tendencies, such as in more counterarguments responding to the presented messages and less memory of negative outcomes of smoking after exposure to a high level of fear (Janis & Terwillinger, 1962). Relatedly, Leshner, Bolls, and Thomas (2009) found initial avoidance tendencies were noted by physiological responses such as faster heart rate (representing less attention allocation) and lower memory of video scene, in response to highly fear-arousing PSAs. Along these lines, Hale and his colleagues (2005) contend that individuals who perceive high fear tend to process information peripherally, whereas individuals who perceive low fear are inclined to process messages systematically. Similarly, Keller and Block (1996) also indicate that a low fear arousal can make people generate more message-associated thoughts on the basis of more recall and

attention to the content. In contrast, when people perceive strong fear that is evoked by a message appeal, their motivations to avoid cognitive thoughts are likely to become stronger (Janis & Terwillinger, 1962).

Message acceptance or rejection: The extended parallel process model. The theoretical models of fear appeals also propose the possibility that fear appeals do not always work effectively in persuasive processes. In early conceptual models, the aroused fears from the appeal are considered a necessary factor that evokes emotional anxiety and activates people's motivation to attend to the messages; however, extreme fear often causes negative consequences.

One of the recent fear appeals models, Witte's (1992, 1994) *Extended Parallel Process Model* (EPPM), provides in-depth knowledge of fear effects by explaining "not only when and why fear appeals are effective, but also when and why they fail" (Wong & Cappella, 2009, p. 2). According to the EPPM, a person who is exposed to fear-arousing messages may evoke one of three results: "null effects, danger control, and fear control" (Wong & Cappella, 2009, p. 3), depending on his/her "perceived efficacy and perceived threat" (Witte, 1992, p. 338). As an overview, when a person evaluates a threat as severe and applicable, and feels that the recommended action can be effective in preventing the danger, he or she will choose *danger control*, and adopt the recommended behavior and accept the message claims due to an enhanced motivation to lessen the threat (i.e., protection motivation) (Witte, 1992, 1994). In other words, danger control is more about individuals' cognitive responses to avert the perceived danger of threat. In contrast, if a person perceives his or her susceptibility to the threat, but the recommendation seems to be ineffective to stave off the danger, he or she will tend to engage in *fear control*, which leads to maladaptive activities (e.g., message avoidance) to cope with fears (Witte, 1992). This process is more related to emotional responses to fears that result in engaging

in strategies to eliminate the fears (i.e., defensive motivation) and reactance to adopt the recommended behaviors. In this way, the EPPM stipulates that the interaction between the level of threat and efficacy activates a certain process; however, recent meta-analysis results also demonstrate the possibility that fear control may occur under the condition in which individuals are exposed to a high fear-arousing appeal, no matter what their self-efficacy is (Witte & Allen, 2000).

A review of previous theoretical models related to fear indicated that the purpose of this study is to contribute to the EPPM discussion. In particular, the EPPM proposes that individuals tend to adopt certain reasoning processes to overcome negative feelings from fear-arousing messages. By assessing people's defensive responses to fear, this study attempts to contribute to our understanding of how people process different levels of fear in the context of tailored communication. From the discussion of regulatory fit, more fluent and careful message-processing activities are expected in the tailored message conditions. However, if some tailored messages under a certain fear level do not positively impact attitudes or behavioral changes, such an elaborated investigation of defensive tendencies may be able to explain why even tailored messages are ineffective when considering changes in level of fear. Importantly, the current research includes various message-processing variables that can estimate people's real-time information processing as well as their general defensive tendencies. There are still limitations that previous models do not specifically explain, including adequate defensive reactions, especially while processing threatening messages (De Hong et al., 2007). Since fear control tends to occur beyond our conscious awareness (Lazarus, 1991), it is not easy to catch "[when or] how such processing occurs," and we cannot "inhibit or control these processes" (Branscombe, 1987, p.15). Empirical studies demonstrate that overwhelming fear causes conscious or unconscious

reactions against the persuasive messages (Rippetoe & Rogers, 1987; Rogers & Mewborn, 1976; Witte, 1992). Consequently, it is meaningful to investigate what psychological processes occur during processing fear appeals to fill in the present theoretical gap in the area of fear appeals (Lang, Potter, & Bolls, 2009; Witte & Allen, 2000).

A defensive avoidance of fear appeals: Secondary task reaction time. To estimate individuals' efforts to control a fear appeal, scholars have mostly asked participants to complete self-report measurements after they watched threatening media content. Such post-experimental measurements have generally included various questions that measure the extent to which participants felt the intensity of defensive tendencies toward the messages during exposure to the content (Hale et al., 1995; Roskos-Ewoldsen, Yu, & Rhodes, 2004). In relation to cognitive responses, measuring "valence or agreement with the message" (Shen & Dillard, 2005, p. 435) has been considered to be the well-known method in persuasion studies that represents the degree to which individuals produce evaluative thoughts in response to the messages (Petty, Ostrom, & Brock, 1981). Usually, once participants provide relevant thoughts about the arguments, those thoughts are classified into three categories, "supporting thoughts" (i.e., positive responses toward the message), "counterthoughts" (i.e., negative reactions toward the message), or "neutral thoughts" (i.e. thoughts that are unrelated to evaluation of the messages) (Shen & Dillard, 2005, p. 435). The main cognitive response is then composed by subtracting the total number of "counterthoughts" from the total number of "supporting thoughts" (Yan et al., 2010). These cognitive responses are one of the indexes that several scholars have used to assess whether participants engage in message elaboration or not (e.g., Shen & Dillard, 2005; Yan et al., 2010). In addition, those scholars used such thought-list measures as an important indicator that predicts whether attitude changes will occur (Petty et al., 1981). Consistent with the proposition

of the ELM, once participants are involved in more message elaboration, this effortful cognitive process leads to relatively stable attitudes and behavioral changes. In relation to fear appeals, it is reasonable to expect that more message elaboration about the threatening messages will also contribute to attitude change as well as behavioral practices that are consistent with the recommendation in the message.

Incorporated into the discussion of defensive avoidance, several scholars have argued that most measures of fear appeal have concentrated on individuals' intention to adopt the message's recommendation as the result of information processing (i.e., message elaboration) (De Hoog et al., 2007; Leshner et al., 2011). However, since the information processing that occurs during exposure to the stimuli of fear can be an important indicator of fear control or danger control, it is also important to consider the underlying cognitive and emotional processing that occurs during exposure to a fear-arousing message (Witte & Allen, 2000). Lang and Basil (1998) suggest using *secondary task reaction time (STRTs)* as a measurement of "the degree to which cognitive resources are available at encoding" (Leshner et al., 2010, p. 491) during exposure to stimuli that are televised or have emotionally powerful content (Fox, Park, & Lang, 2007; Lang & Basil, 1998; Lang, Bradley, Park, Shin, & Chung, 2006). Stated differently, scholars have considered the STRTs as "an indicator of the amount of resources not being used to perform the primary task" (Lang & Basil, 1998; Lang, Park, Sanders-Jackson, Wilson, & Wang, 2007, p. 319). The rationale behind STRTs methodology, which comes from the *Limited Capacity Model of Attention* (Navon & Gopher, 1979; Schneider, Dumais, & Shiffrin, 1984), is that mental resources are required to process information, and that these resources are limited. The proponents of STRTs methodology argue that people have a limited amount of cognitive resources; therefore, if individuals spend more cognitive resources to act upon a primary task,

STRTs slow down because fewer resources are left to perform a secondary task (Lang & Basil, 1998; Lang et al., 2006).

A recent conceptual model and empirical study, Lang's *Limited Capacity Model of Motivated Message Processing* (LC4MP), provides a more comprehensible framework to understand how individuals process emotional message elements (e.g., disgusting graphics), alongside the discussion of the STRT (Lang, 2000, 2006; Lang et al. 2006, 2007). According to LC4MP, assigning cognitive resources to information encoding is mostly decided through controlled processing that is consistent with individuals' goal (e.g., how much one pays attention to certain information) or automatic processing (e.g., heart rate and skin conductance) owing to a message's features. In relation to highly emotional content, participants experienced a greater automatic increase of resource allocation in message intake due to this content's ability to attract participants' attention, for instance (Lang, Newhagen, & Reeves, 1996). In recent studies, scholars have demonstrated that fear arousing stimuli and emotionally charged media content automatically elicits an *aversive motivational tendency*, which makes people more involved in "protection" related processes (Lang, Shin, & Lee, 2006). For instance, when people encounter a stimulus that contains unfavorable and fear arousing features, aversive motivations are generated which motivate them to figure out what the danger is. In this way, people assign more resources to process threatening information from the content. However, the more a stimulus becomes negative and aversive, the greater individuals' attempts are to shift the allocated resources away from encoding as defensive processing (Lang, 2006). Put together, individuals' initial response to an unpleasant stimulus is to allocate more resources to process the information; however, if the stimulus contains more aversive features beyond a moderate level, their defensive responses will become stronger (Bolls et al., 2001; Bradley et al., 2001).

In the context of health communication, advertisements that contain fear appeals boost the tendency of those motivational activities and avoidance of message elaboration, rather than provide arguments against the messages (Witte, 1992, 1998). Similarly, Witte's fear control is the representative form of defensive avoidance, which generates from fear-arousing content (Witte, 1992, 1994). Scholars indicate that human beings want to manage their emotions and cope with negative feelings (Gross, 1998, 2002); therefore, one of the specific tactics to control fear may be to remove cognitive resources from processing highly negative media content. Moreover, Nabi (2002) especially indicates that fear appeals seem to have a strong association with reactance or resistance in terms of responding to the information and thinking about the arguments. The results of heart rate research also showed a similar tendency, in which individuals gradually diminish the allocation of resources to stimuli, which leads to speeding up the heart rate (Bradley et al., 2001).

Theoretically, allocating more cognitive resources to perform the primary task can be interpreted as more concentration and thoughtful information processing rather than heuristic or peripheral processing. In the ELM, a high elaboration typically involves more cognitive resources used to scrutinize information, examine the persuasive messages with existing knowledge, and gauge the quality of arguments (Petty & Cacioppo, 1986). In this light, it is quite possible that more cognitive resource allocation is needed to perform such information elaboration. In relation to the STRTs, scholars repeatedly found slower STRTs and more message recognition responding to less unpleasant or low-fear messages, which means more resources were spent processing the messages, rather than allocated to perform the secondary task (Fox et al., 2007; Leshner et al., 2010, 2011). In contrast, the same study showed that participants responded to the secondary task quickly in the high fear arousing condition. STRTs

therefore could describe how people process information and allocate mental resources in response to fear, as a defensive tendency. Although none of the previous studies has adopted the STRTs measure in the way of message elaboration, this research now attempts to examine the issue of fear and message processing with the STRTs. Knowing whether elaborative processing of messages occurs or not is important because elaboration of messages increases accessibility to individuals' attitudes toward the recommended behaviors and enhances message effectiveness through greater message involvement (Roskos-Ewoldsen et al., 2004).

Taken as a whole, it is possible that regulatory fit effects can also change if an excessive fear appeal message induces “defensive maneuvers,” which refer to the efforts to minimize perceptions of threats and negative feelings from a threatening message (Keller & Block, 1996). Therefore, adopting and measuring diverse cognitive and emotional reactance toward the fears in this study will enhance our understanding of the fit effects in responding to diverse media content. The following section therefore provides an integrative framework of the effects of fear appeals and regulatory fit on persuasion to generate the hypotheses and the research questions.

An Integrative Framework of Regulatory Fit and Fear Appeals

Although several scholars have found that regulatory fit can strengthen perceived personal relevance to message content and effortful information processing, some studies have shown that participants tend to process the message less carefully even under the fit condition (Briley & Aaker, 2006). The remaining questions to be answered are when and why people do not use this resource from the experience of regulatory fit. One possibility is that the mediated message may include distracting characteristics that interrupt the processing of compatible messages. Media messages often display content that varies in terms of the presence of graphics and sounds that might lead audiences to process the message in different ways (Leshner et al.,

2011). Especially, such messages that use fear appeal often contain audiovisual characteristics (e.g., vivid language and pictures) that could be perceived as threatening to an individual's health and evoke multiple other emotions (Dillard & Nabi, 2006; Dillard & Peck, 2001). Since most regulatory fit studies have never examined how *defensive avoidance*, generated from messages attributes, interacts with regulatory fit and persuasion, it is important to examine those variables together that may influence a person's motivations to accept the message recommendation (Avnet & Higgins, 2006).

According to regulatory fit effects, any emotional response to a message is more likely to be perceived as feeling right; therefore, scholars have indicated that this emotion tends to become more intense under the fit condition versus the nonfit condition (Schwarz & Clore, 1996). Scholars have indicated that even enhanced negative feelings from an experience of fit can enhance message effectiveness. In the context of health communication, Kim (2006) empirically found that participants who experienced the fit perceived a higher psychological risk of smoking, which lessened their intentions to smoke more so than participants who experienced the regulatory nonfit. Yet, such previous studies only used a single and moderate level of fear appeal (e.g., social approval) as an outcome across conditions, and researchers have mostly adopted text-based fear messages, such as print advertisements (Kim, 2006; Zhao & Pechmann, 2007). If the regulatory fit effects are strong enough to resist a message's emotional attributes (e.g., graphics and sound), it is reasonable to conclude that the fit can lessen the negative responses from even high fear appeals and totally independent from emotional avoidance mechanism.

Research Questions and Hypotheses

In this light, the first step is to explore how the level of fear influences people's processing of messages that are compatible with their regulatory focus while taking into

consideration people's defensive tendencies. As previous studies showed, an individual's regulatory focus refers to his or her main concerns that lead him or her to pay attention to a certain outcome (Cesario & Higgins, 2008). Previous studies on the effect of regulatory focus repeatedly found that matching people's regulatory focus with a particular message frame generates persuasive benefits (Aaker & Lee, 2001; Lee & Aaker, 2004; Zhao & Pechmann, 2007). From the discussion of the negative effects of fear appeals, the level of fear appeal can make people use defensive reasoning processes that lead to a decrease in persuasive effectiveness (Keller & Block, 1999; Witte & Allen, 2000). On the basis of the above mentioned discussion, people under the condition of high fear are more likely to be involved in *fear control*, such as denying the relevance of the topic to themselves (e.g., this bad thing will not happen to me), reducing message-relevant thoughts, and denouncing the message quality (Keller & Block, 1999; Witte, 1992). As the previous fear appeals studies have shown, a low fear appeal is conversely less likely to result in fear control (Witte, 1992, 1994); therefore, it is possible that people tend to show less avoidance tendencies in comparison to a high fear condition. Although an enhanced feeling of fear is problematic under a high fear condition, people under the fit condition with a low fear appeal may experience a positive effect of the fit, which is consistent with the previous studies (Kim, 2006). Scholars have often determined whether defensive tendencies occur in terms of the abovementioned maneuvers (i.e., perception of message relevance, message reactance, and avoidance). Consequently, the study examined the following research question and hypotheses (see Figure 1 & 2):

RQ1: Does the level of fear appeal influence the intensity of defensive tendencies (i.e. perception of personal relevance, perception of message reactance, and avoidance) under a regulatory fit condition?

H1.1: Under a regulatory fit condition, participants under a high fear condition will generate a) less message relevance to themselves, b) more negative perception of message quality, and c) more avoidance tendencies than participants under a low fear condition.

H1.2: Under a high fear condition, defensive tendencies will not differ between participants under a fit condition and participants under a nonfit condition.

H1.3: Under a low fear condition, defensive tendencies will differ between participants under a fit condition and participants under a nonfit condition.

H1.4: There will be significant correlation between defensive tendencies and persuasion.

The next outcome domain to consider is message processing under different levels of fear. Previous regulatory fit studies found that message fluency and more supportive arguments for messages mediate the relationship between the regulatory fit and message effectiveness (Lee & Aaker, 2004; Zhao & Pechmann 2007). In particular, some scholars expect that those who experience the fit tend to involve themselves in high message elaboration, rather than low message elaboration (Higgins, 1998). In relation to level of fear, previous studies showed the possibility that more fluent information processing and effortful processing will lead to message effectiveness in combination with certain levels of fear. In particular, when a message contains a low fear appeal, a relatively more systematic information processing occurs under the regulatory fit condition versus nonfit (Lee & Aaker, 2004). In contrast, when a message presents a high fear appeal, people attend to the message selectively as a defensive tactic (Eagly & Chaiken, 1993; Rogers, 1983) and tend to be too overwhelmed to encode the messages. For instance, in response to a high fear, participants responded faster to a secondary task and poorly recognized the messages (Leshner et al., 2009, 2010). Moreover, scholars have often observed that participants have fewer message-relevant thoughts and less support for the messages under the condition of

high fear. Considering regulatory fit, it is possible that increasing fear under the condition of fit will cognitively overwhelm individuals, and may reduce the cognitive resources available to focus on message processing. Accordingly, the systematic processing under the fit may be weakened or similar to the nonfit condition. Under a high fear condition, it is therefore reasonable to expect that STRTs get faster, that is interpreted as more cognitive resources being available for the secondary task. Several scholars have investigated information processing in similar cognitive overwhelming situations in terms of the number of arguments in a certain stimulus and the fluency of message processing (Lee & Aaker, 2004; Shen & Dillard, 2007; Zhao & Pechmann 2007). In addition to the common measures of information processing, this study recommends measuring message elaboration in terms of STRTs, which indicate the level of cognitive resources consumed for information processing. On the basis of the abovementioned rationale, this study investigated the following research question and propositions:

RQ2: Does the level of fear appeal influence message elaboration (i.e., message processing fluency, elaboration upon message, and STRTs) under a regulatory fit condition?

H2.1: Under a regulatory fit condition, participants under a high fear condition will generate a) less fluent message processing, b) less elaboration upon the message, and c) faster STRTs than participants under a low fear condition.

H2.2: Under a high fear condition, message elaboration will not differ between participants under a fit condition and participants under a nonfit condition.

H2.3: Under a low fear condition, message elaboration will differ between participants under a fit condition and participants under a nonfit condition.

H2.4: There will be significant correlation between message processing and persuasion.

To the extent that a fear appeal can moderate message elaboration and cognitive processing even under the fit condition, individuals' attitudes and behavior intentions could also be affected. In fact, when the defensive avoidance activate in response to fear appeals, scholars have found persuasive effects to diminish (Keller & Block, 1999; Yi, Phelps, & Roskos-Ewoldsen, 1998). Since it is quite possible that feelings of fear will be enhanced under the fit condition, people under a high fear appeal condition will show less intention to change their behaviors and less positive attitudes toward the recommended behavior than people under a low fear appeal condition because strong defensive tendencies will be activated against high fear. Therefore, it is reasonable to expect that relatively strong regulatory fit effects on persuasion will diminish or be similar to the condition of nonfit. In contrast, under a low fear condition, less resistance to a fear appeal will generate less fear control and more message processing may occur for the fit condition. Consequently, more persuasive effects of the fit versus the nonfit may occur. Since this study deals with the topic of binge drinking and tailoring anti-binge drinking messages to be more persuasive, persuasion can be observed through individuals' attitudes toward drinking and the messages presented to them, as well as their own behavioral intentions (Miller et al., 1988). The following research question and hypotheses tested the relationship between regulatory fit, fear appeal, and persuasion:

RQ3: Does the level of fear appeal influence persuasion (i.e., attitudes toward binge drinking, attitudes toward messages, behavioral intention, and intention to not consume alcohol) under a regulatory fit condition?

H3.1: Under a regulatory fit condition, participants under a high fear condition will evaluate a) more favorable attitudes toward drinking, b) more negative attitudes toward messages,

c) less intention to follow the recommendation, and d) more intention to consume alcohol than participants under a low fear appeal condition.

H3.2: Under a high fear condition, persuasion will not differ between participants under a fit condition and participants under a nonfit condition.

H3.3: Under a low fear condition, persuasion will differ between participants under a fit condition and participants under a nonfit condition.

In addition to the abovementioned hypotheses, one research question investigates the mediating role of message processing and defensive avoidance between regulatory fit and persuasion in both a high fear condition and a low fear condition. The following research question more clearly investigates the underlying mechanism of regulatory fit's effectiveness on persuasion in response to a fear appeal.

RQ4: Do defensive tendencies and message processing mediate the relationship between regulatory fit, level of fear, and persuasion?

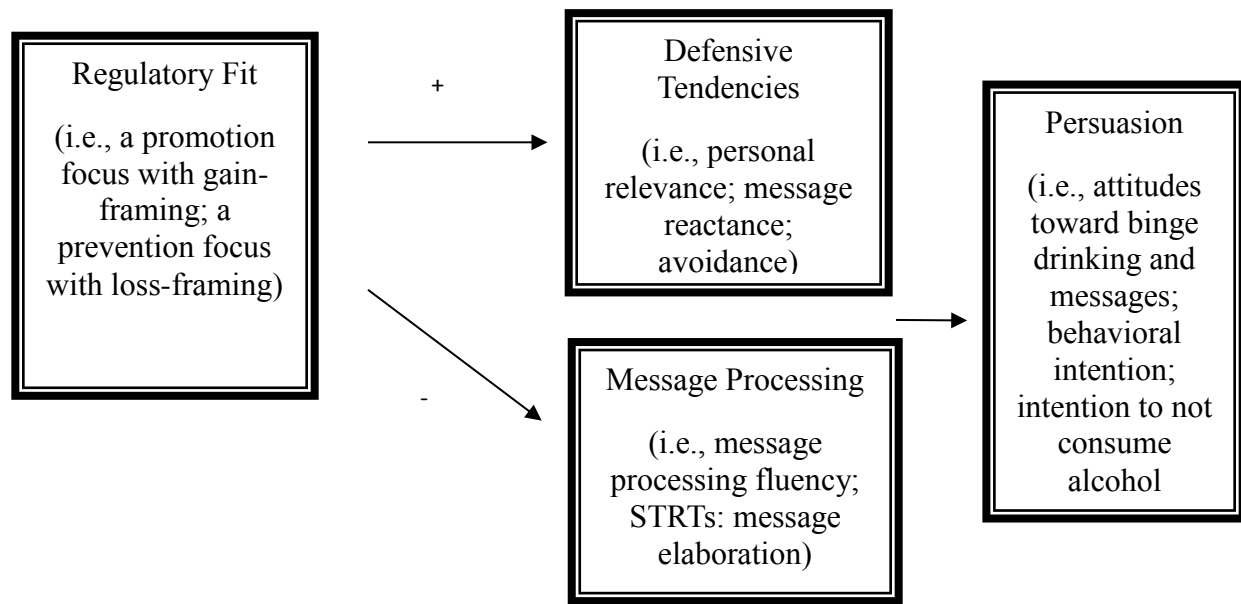


Figure 2. A Proposed Model: Under a High Fear Appeal

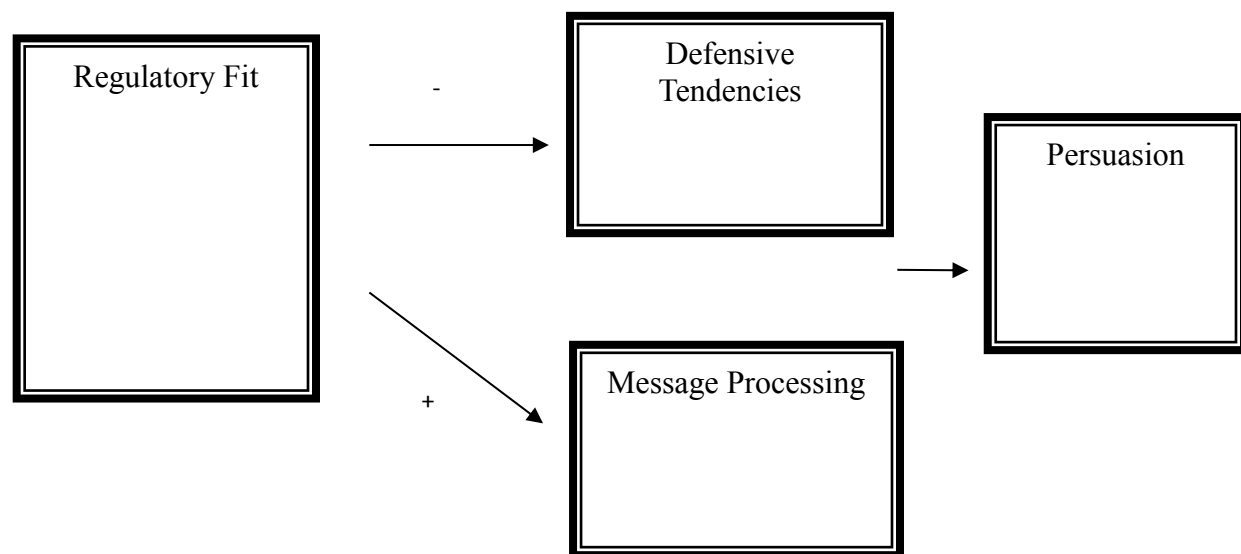


Figure 3. A Proposed Model: Under a Low Fear Appeal

CHAPTER 3: METHODOLOGY

Research Design Overview

In relation to persuading college students about health issues, the function of fear appeals in a given regulatory fit frame on youths' perceptions of anti-drinking messages is tested. To test the research questions and hypotheses, a 2 (regulatory focus: promotion vs. prevention) X 2 (message framing: gain vs. loss) X 2 (fear appeal: high vs. low) between-subjects factorial experiment was conducted in the Manship School's Media Effects Laboratory. 275 students from various departments participated in the study in exchange for extra credit during the 2011 fall semester.

In terms of sampling and research method, the researcher mainly adopted volunteer sampling of Louisiana State University's undergraduate students. Although the non-probability sampling often suffers from low external validity, the issue of alcohol consumption is prevalent among college students' daily lives, so the results from LSU's students may provide some generalizable implications to American youth at large. Furthermore, the dissertation's main research design is an experiment that restricts the power of external validity, too (e.g., less power to generalize the results to non-experimental environment and to the population); however, the main purpose of this project is to examine the causal relationship among variables. Therefore, the experiment is the best way to investigate the research questions and hypotheses.

Procedures

The experiment was conducted under the following procedure. Once participants arrived in the lab, the researcher briefly explained the purpose of the study, the duration of the study, and tasks that they needed to complete. Then, participants who agreed to participate in the research were randomly assigned to one of eight experimental conditions: regulatory fit (i.e., either a

promotion focus with gain-framing or a prevention focus with loss-framing) with a high fear appeal; regulatory fit (i.e., either a promotion focus with gain-framing or a prevention focus with loss-framing) with a low fear appeal; regulatory nonfit (i.e., either a promotion focus with loss-framing or a prevention focus with gain-framing) with a high fear appeal; or regulatory nonfit (i.e., either a promotion focus with loss-framing or a prevention focus with gain-framing) with a low fear appeal (see Table 1.1). Each student used a personal Apple computer at the lab, and all instructions were presented on each computer. First, participants in the promotion/prevention conditions were asked to complete two compatible tasks (i.e., writing an essay and viewing the product advertisement) that only related to one of the regulatory goals, and then they were exposed to PSAs that contained either a compatible message (i.e., gain frame) or an incompatible message (i.e., loss frame). This process instantly created regulatory fit and nonfit. While viewing the PSA (i.e., a primary task) for approximately two minutes and thirty seconds, participants were also asked to perform secondary tasks (i.e., pressing a “shift” key on the keyboard) four times. Once they watched the PSA, they were instructed to complete questionnaire in the *MediaLab v2008* program, which gauges their defensive tendencies (i.e., avoidance, perception of message relevance, and message quality), message processing (i.e., elaboration upon messages, processing fluency, and gauged dummy varying secondary task reaction times), persuasion (i.e., attitudes toward the messages, attitudes toward binge drinking, behavioral intention, and intention to change alcohol consumption), manipulations check, and demographics. All self-report items were presented on-screen through the *MediaLab* program.

Table 1.1. Summary Table of Study Design

| Main Study (<i>N</i> = 248) | | Regulatory Focus | | | |
|---------------------------------|-----------|------------------|------------|------------|------------|
| | | Promotion | | Prevention | |
| Message Frame | | Loss Frame | Gain Frame | Loss Frame | Gain Frame |
| Fear | High Fear | 31 | 27 | 32 | 29 |
| | Low Fear | 35 | 32 | 31 | 31 |

Note. Entries are the number of participants.

Participants

A total of 275 college students participated in the main experiment. However, 25 participants were excluded from the data analyses because they were either incomplete in response to more than a half of the secondary tasks, or the participants did not complete the secondary tasks at all. Two extreme outliers who skewed the STRT data extremely (i.e., *skewness* > + 3.0, *skewness* of STRTs after removing outliers = 1.16)) were also removed. Therefore, data from a total of 248 participants were used for further data analyses. The researcher checked whether all potential mediators and dependent variables were skewed. Only one variable (i.e., processing fluency) was transformed to normalize negatively skewed means (i.e., *skewness* of message processing fluency after transformation = 1.03) (Tabachnick & Fidell, 2001).

In terms of participants' gender, 23% of participants were male (*N* = 57) and 77% (*N* = 191) were female. In general, all participants had consumed alcohol twice or more times per week (*M* = 2.45, *SD* = 2.34), and usually had 3 glasses of alcohol in a single setting (*M* = 2.96, *SD* = 1.97), and experienced hangovers less than once in the past week (*M* = .54, *SD* = 1.18) (see Table 1.2).

Table 1.2. Summary Table of Means and Standard Deviations for Drinking Habits

| | Experiment (<i>N</i> = 248) | |
|------------------------|------------------------------|-----------------------------|
| | Male (<i>N</i> = 57) | Female (<i>N</i> = 191) |
| Drinking Habits | | |
| Frequency of drinking | 2.75 (2.52) | 2.36 (2.28) |
| # of alcohol beverages | 3.09 (2.48) | 2.96 (1.79) |
| # of hangovers | .68 (1.37) | .50 (1.12) |

Note. Numbers in parentheses are standard deviations.

Manipulations of Independent Variables

Regulatory focus manipulation. Two manipulation tactics for temporarily priming a certain regulatory focus were adopted from numerous studies and confirmed to be effective at bringing a certain regulatory focus to participants' minds at the moment (Kim, 2009; Lee & Aaker, 2004). For priming a regulatory focus, participants were asked to complete two tasks, such as listing personal history related to either a promotion or a prevention focus and reading the advertisement that best fits their focus. This manipulation was geared toward getting participants to think a certain way. After completing two tasks, participants in the promotion focus condition thought about how to "attain gains," whereas participants in the prevention condition mainly thought about how to "avoid losses."

Regarding the first task, participants were asked to write their past and current "achievements or success" that enrich their lives or "duties or obligations" that made them feel more secure (Higgins et al., 1994; Liberman, Idson, Camacho & Higgins, 1999). In particular, these participants were asked to describe past and current rewarding experiences that have made them work harder or inspired them to accomplish something. In contrast, participants in the

prevention condition were asked to express past and current duties that have made them not perform something in order to not risk loss. After this task, participants in the promotion focus condition were asked to read the advertisement message that best illustrates “the promotion benefits,” whereas participants in the prevention focus condition were asked to read the message that focuses on “the prevention benefits” (i.e., *Welch’s Grape Juice* advertisement, Lee & Aaker, 2004, p. 207).

A manipulation check for regulatory focus was conducted in the main experiment. Before participants were exposed to the anti-binge drinking PSA, they were asked to complete the abovementioned two tasks that induce either a promotion goal or a prevention goal. Then, participants were asked to gauge, the degree to which their attention was mostly inclined towards *advancement* (i.e., the promotion benefits) or *protection* (i.e., the prevention of loss), on 7-point semantic differential item scale (i.e., “1” representing “advancement and achievement,” and “7” representing “protection and security”) (Kim, 2006). This is the additional measurement for *Regulatory Focus’s* manipulation check that was only used in the main study and showed a satisfactory level of internal consistency (correlation $r = .65$).

Message framing manipulation. The researcher used either positive or negative consequences of drinking alcohol to manipulate the PSA messages. For *gain* message framing, the benefits of not overusing alcohol were presented with the promotion interests, such as “achievements” (e.g., “If you do not abuse alcohol, you can have a healthy body, exercise better judgment, perform better academically, and avoid criminal behavior... Give yourself a more healthy and pleasurable life!”). In contrast, for *loss* message framing, the negative consequences of alcohol overuse were conveyed with the prevention concerns, such as “security and safety” (e.g., If you abuse alcohol, you cannot avoid certain health problems, like extreme sleepiness,

fatigue, difficulty breathing, low blood sugar, and impaired judgment... Guard yourself against losing your health!”). Before constructing the message framing, the researcher collected information about binge drinking and its consequences from the Center for Disease Control and Prevention (<http://www.cdc.gov/alcohol/fact-sheets/binge-drinking.htm>) as well as TeensHealth, (http://kidshealth.org/teen/drug_alcohol/alcohol/binge_drink.htm), which were used to formulate the PSA messages.

Manipulation of regulatory fit. In this study, the researcher created the fit by matching a primed regulatory focus and a message frame (Cesario et al., 2004; Latimer et al., 2008; Spiegel et al., 2004). In particular, promotion-oriented participants those who were asked to write about inspiration in their lives, saw the PSA messages that focused on the gains of the desirable outcome by complying with the recommended behavior. In contrast, to manipulate mismatches, promotion-oriented participants saw the PSA messages that stressed the loss of the desirable outcome by noncompliance. Similarly, for prevention-oriented participants, either a gain-framed message or a loss-framed message was provided to manipulate the experience of regulatory fit and nonfit, respectively. Although participants were not asked to write down the compatible strategic means that are consistent with their motivational goals, scholars have indicated that showing a message frame that sustains individuals’ motivational goal can generate similar fit effects (Lee & Aaker, 2004; Zhao & Pechmann, 2007).

Level of fear manipulation. Following the conventional manipulations in health communication, a level of fear was operationalized as the degree to which “the seriousness of the consequence” was presented in the form of vivid images and language (Boster & Mongeau, 1985; Keller & Block, 1999, p. 307). The various consequences of alcohol overuse were obtained from information on the Center for Disease Control and Prevention and TeensHealth’s websites. Both

text-based explanations of the consequences and fear-arousing graphic images were used to induce participants' feeling of fear. In particular, the PSA messages implied participants' relevance to the issue of alcohol abuse by using personalized words (e.g., you will have...) and inserting the scene of college students drinking alcohol. Consistent with the consequences stated in the messages, several graphic images were edited for the stimuli. For the condition of high fear, the stimulus advertisement contained highly fearful health-related consequences from binge drinking, such as images of traffic accidents or alcohol-related violence. Conversely, the stimulus in the condition of low fear presented less severe consequences from binge drinking with some images, such as sleeping during class or weight gain.

The images were adopted from videos that appeared on "alcohol awareness PSAs" (originally from [www. stopalcoholdeaths.com](http://www.stopalcoholdeaths.com)), YouTube (www.youtube.com), and Google (www.google.com) websites. The researcher searched the terms "binge drinking" and "alcohol overuse" to find the images and video-graphics on each website. By using real examples and easily accessible images in the current PSAs, the researcher attempted to enhance the study's external validity. Moreover, experiencing even a higher level of fear in an experimental condition does not make participants experience fear that is excessively beyond that which they would experience in their normal life. Since some scholars are concerned that gory images can lessen fear appeals' effects on persuasion (Leshner et al., 2010), the stimulus also cautiously excluded images that created the feeling of "disgust." In particular, scholars have emphasized that including contaminated food images, animals, sexual actions, damaged organs, and germs can elicit the feeling of disgust (Haidt, McCauley, & Rozin, 1994); therefore, the images on the stimulus PSA manipulated the level of fear without the abovementioned graphic images.

Detailed information of fear appeals and message manipulation is also provided in the following description of stimuli.

Stimuli: Anti-binge Drinking Advertising

Window's Movie Maker was used to create all stimulus advertisements. This software program allowed the researcher to easily edit the images and insert text-based messages on the video for free. The four stimulus advertisements varied in content only in terms of manipulation for message framing and level of fear appeal. Along with a text message regarding the alcohol consumption, the outcomes of drinking alcohol were presented with a low fear appeal (e.g., sleep during class) or a high fear appeal (e.g., car accident). The fear appeals appeared in visually since the presentation of images can intensify the advertising appeal as well as message effect compared to only presenting a text-based, framed message (Schneider et al., 2001). Additionally, music with a fast tempo and a dramatic climax was inserted into the two high fear conditions, whereas music with a slow tempo and no dramatic emphasis was inserted into the two low fear conditions.

The first treatment condition incorporated a gain message frame with highly fearful graphics and text-based explanations of the serious consequences (i.e., the condition of a gain frame and high fear). The message emphasized the favorable benefits from responsible alcohol use and delivered relatively fearful graphics. The same graphics were used for the condition of a loss frame and a high fear appeal to reduce the confounding from using different video and graphic images (see Appendix B for more detail).

The second treatment condition integrated a loss frame into high fearful consequences of binge drinking (i.e., the condition of a loss frame and high fear). All of the gain framing that

emphasized the advantages of not overusing alcohol in the previous condition was changed to a loss frame that emphasized the disadvantages of excessive alcohol drinking.

The third treatment condition incorporated gain framing with slightly fearful graphics and text-based explanations of the consequences of excessive drinking (i.e., the condition of a gain frame and low fear).

The fourth condition integrated a loss frame with slightly fearful consequences of alcohol consumption (i.e., the condition of a loss frame and low fear). All of the gain statements that illustrated the good reasons to avoid excessive alcohol use were changed to loss statements that emphasized the disadvantage of binge drinking.

Manipulation Check: A Pilot Study

Because the researcher created the messages and fear appeals for this project, a pilot study was conducted to determine if the participants would perceive the message frame as either a gain frame or loss frame, as well as if the fear appeals would be perceived as either low or highly fearful. A total of 47 students from various departments were recruited to participate in the pilot study in exchange for extra credit during the 2011 summer semester.

To check the effectiveness of the message framing manipulation, participants were asked to evaluate the message according to the following four items on a 7-point scale (“1” representing “strongly disagree” and “7” representing “strongly agree”) (Bower & Taylor, 2003; Schneider et al., 2001): “This ad focused on the advantage of not overusing alcohol”; “This ad showed the positive things that can happen if someone does not binge drink”; “This ad focused on the disadvantage of the overuse of alcohol”; “This ad showed the negative things that can happen if someone does binge drink.” The average of the former two items’ scores constructed a single index to gauge the effectiveness of gain frame manipulation and the latter two items’ score

was used for manipulation check in loss message framing. The correlation results indicated a high degree of internal consistency in both cases (gain frames: correlation $r = .84$; loss frames: correlation $r = .96$). Therefore, “perceptions of gain-framing” and “perceptions of loss-framing” were computed by averaging the values of each of the two distinctive items, respectively.

Three measures were included in the questionnaire to assess the effectiveness of fear appeals manipulation. Participants evaluated the main advertising appeal in terms of whether it was fearful and whether they were afraid or scared using with a 7-point scale, with “1” representing “none of this feeling,” and “7” representing “a great deal of this feeling” (Dillard & Anderson, 2004). These items were combined into an index (Cronbach’s $\alpha = .95$), on which the higher the score, the greater the perception of fear appeal.

Once participants arrived in the lab, the researcher explained the purpose of the research and briefly described participants’ task. After they signed in the consent form to participate in the research, they were randomly assigned to one of four experimental conditions that varied in terms of message frame and level of fear appeal: gain-framing with a high fear appeal; loss-framing with a high fear appeal; gain-framing with a low fear appeal; and loss-framing with a low fear appeal. Each participant watched a PSA that ran for approximately two minutes and 30 seconds on an individual computer. After watching the PSAs, participants were asked to complete a series of questionnaires these contained measurements for their perceptions of fear and message frames.

First, to check the message framing manipulation, participants were asked to assess the extent to which ads emphasized gain (e.g., advantage of not overusing alcohol) or loss (e.g., disadvantages of binge drinking). A 2 (message framing: loss vs. gain) X 2 (fear: high vs. low) repeated-measures analysis of variance (ANOVA) was performed to assess the effectiveness of

the message frames manipulation. The results indicate a statistically significant difference in participants' perceptions of message emphasis, $F(1, 43) = 29.54, p < .001$, partial $\eta^2 = .41$, but no significance in terms of an interaction between message frames and level of fears, $F(1, 43) = .35, p > .05$, partial $\eta^2 = .01$. In accordance with the study design, participants in the loss framing condition ($M = 6.79, SE = .21$) thought that the ad conveyed more ideas about the costs of binge drinking than participants in the gain framing condition ($M = 3.36, SE = .21$). In a similar pattern, participants in the gain framing condition perceived ($M = 5.90, SE = .17$) that the ad underscored more ideas about the benefits of not overusing alcohol than participants in the loss framing condition ($M = 1.96, SE = .18$).

In a next step, a similar 2 X 2 between-subjects ANOVA showed a statistically significant difference in subjects' perception of level of fear appeal, $F(1, 43) = 125.33, p < .001$, partial $\eta^2 = .75$, but not for an interaction between the two independent variables, $F(1, 43) = .01, p > .05$, partial $\eta^2 = .00$. The results showed that participants in the high fear appeal condition evaluated the ads as significantly more fearful ($M = 5.76, SE = .19$) than participants in the low fear appeal condition ($M = 2.76, SE = .19$).

Put together, the above-mentioned pre-test results supported that all manipulations were successfully designed to examine the main effects of fear appeals and message framing. In addition to the pilot study, a second manipulation check was conducted after 275 participants completed a series of tasks in the main experiment. Similar to the pilot study, participants in the actual experiment completed the manipulation check for message frame and level of fear. For level of fear, a higher internal consistency was found in the main experiment (Cronbach's $\alpha = .88$); therefore, the index of perceived fear was used to estimate the manipulation's effect.

Moreover, in the main experiment, measures for message framing also showed an adequate level of internal consistency (gain frames: correlation $r = .93$; loss frames: correlation $r = .89$).

Manipulation Check: Main Experiment

To check the validity of manipulations, a series of 2 (regulatory focus) X 2 (message framing) X 2 (level of fear appeals) ANOVA and a repeated-measures ANOVA were also conducted for manipulation check of the three independent variables (i.e., message framing, level of fear, and regulatory focus).

First, a repeated-measures ANOVA showed no main effect of fear appeals, $F(1, 240) = .00, p > .05$, partial $\eta^2 = .00$, or regulatory focus, $F(1, 240) = .01, p > .05$, partial $\eta^2 = .00$, from the analysis. Nor were any three-way interactions among independent variables found, $F(1, 240) = 1.36, p > .05$, partial $\eta^2 = .01$. The results only showed that participants significantly perceived the loss-framed messages as those that focus on the losses ($M = 6.56, SE = .08$), rather than those that focused on the gains ($M = 2.27, SE = .08$), $F(1, 240) = 41.78, p < .01$, partial $\eta^2 = .15$. Conversely, participants evaluated the gain-framed message as one that focuses on the gains ($M = 6.02, SE = .08$), rather than the losses ($M = 2.81, SE = .09$). Therefore, the manipulation of message frame appeared to be effective.

Similarly, the manipulation check of perceived fears showed a significant level of fears' main effects, $F(1, 240) = 81.06, p < .001$, partial $\eta^2 = .25$. Participants expressed higher feeling of fears after being exposing to high fear-arousing stimuli in the condition of high fear ($M = 5.19, SE = .12$), whereas participants in the condition of low fear perceived the stimulus to be not too fearful ($M = 3.67, SE = .12$). In addition to non-significant main effects of regulatory focus, $F(1, 240) = 0.12, p > .05$, partial $\eta^2 = .00$, as well as message framing, $F(1, 240) = 3.81, p > .05$,

partial $\eta^2 = .01$, non-significant interactions effects among three independent variables, $F(1, 240) = .37, p > .05$, partial $\eta^2 = .00$, also indicated that the manipulation for fear was successful.

A three-way ANOVA interaction outcome only confirmed a significant main effect of regulatory focus on the manipulation check of regulatory focus, $F(1, 240) = 515.29, p < .01$, partial $\eta^2 = .68$. The results revealed no main effects for message framing, $F(1, 240) = 0.01, p > .05$, partial $\eta^2 = .00$, and level of fears, $F(1, 240) = 1.98, p > .05$, partial $\eta^2 = .01$, or interaction effects among such variables, $F(1, 240) = 0.24, p > .05$, partial $\eta^2 = .00$. After completing promotion focus tasks, participants evaluated whether or not they paid more attention to “advancement and achievement” ($M = 1.76, SE = .10$). Similarly, the tasks for prevention made participants attend more to “protection and security” ($M = 4.92, SE = .10$). Hence, the manipulation check of the regulatory focus was also significantly efficient for this study.

Measurement of Potential Mediators and Dependent Variables

The following sections provide the operationalization of each potential mediating variable and dependent variable. For each variable, the internal consistency (i.e., Cronbach’s α or Pearson r) among items was checked and the number was provided along with the questions.

Measurements of defensive tendencies. To gauge participants’ avoidance tendencies when responding to the message’s fear appeal, three types of defensive reactions were adopted from those used in previous literature. Particularly, perceptions of personal relevance, message reactance, as well as defensive avoidance have been considered as ways to estimate biased reasoning to resolve the negative feeling of fears (Keller & Block, 1999; Meyers-Levy & Maheswaran, 2004; Roskos-Ewoldsen, et al., 2004; Witte, 1991, 1992).

In ELM, a message’s personal relevance has been considered as an important factor that influences persuasion through enhancing receivers’ involvement in processing the message

(Caccioppo et al., 1981). In general, researchers have defined *message relevance* as “the perceived relevance of a message by the message recipient, in view of that person’s goals, values, and interest” (Anghelcev, & Sar, 2011, p. 484). Therefore, participants’ perception of personal relevance with the message was measured in this study using two items on a 7-point scale that Meyers-Levy and Maheswaran (2004) used in their studies. This variable was operationalized as the degree to which participants feel that the message is “interesting to themselves” and “relevant to themselves” (p. 163), with response options ranging from “1” (“definitely no”) to “7” (“definitely yes”). The association between the two items was high (correlation $r = .71$).

Reactance to the message is defined as individuals’ tendencies to derogate the message, “when [their] perceived freedom is reduced” (Witte, 1992, p. 332). Although few studies have included this measure as the results of fear appeals, Witte (2002) highly suggested including message reactance as the one of defensive outcomes toward fears to extensively understand people’s reaction to fear appeals. The operationalization is the degree to which “the participants feel derogated by the message, and the degree they feel the message was trying to manipulate them” (Cheah, 2005, p.222; Witte, 1991). For this research project, 9 items that relate to perceived message quality, such as “credible, unbelievable, exaggerated, convincing, informative, helpful, valuable, good advice, and important” (Keller & Block, 1999) were used, with 7 point scale options ranging from “strongly disagree” (“1”) to “strongly agree” (“7”). For this study, the internal consistency for these items was quite high (Cronbach’s $\alpha = .95$).

On the basis of its conceptual definition (i.e., “ones’ motivation to resist the message,” Witte, 1992), the variable of *defensive avoidance* is operationalized as the degree to which participants avoid processing information in relation to binge drinking. Four questions that Roskos-Ewoldsen, Yu, and Rhodes (2004, p. 58) adopted were used in this study: “I try not to

think about the possibility of developing serious negative outcomes of drinking alcohol”; “ I sometimes wish I could avoid situations that confront me with facts about abuse of alcohol and its negative consequences”; “When I think about the threats of something like serious negative outcomes of drinking alcohol, I find it best to get my mind on something more pleasant”; and “When I think about the prospect of negative consequences of binge drinking, I sometimes feel like eating too much”(with “1” representing “strongly disagree,” to “7” representing “strongly agree”). The internal consistency of these measures in this study was acceptable (Cronbach’s $\alpha = .66$)

Measurements of message processing. An individual’s capability to easily and fluently process messages has been considered to be the mediator between regulatory fit and persuasion (Labroo & Lee, 2006; Lee & Aaker, 2004). To assess participants’ *message fluency*, the extent to which participants could encode the information was measured through three 7-point Likert-type scales, which were adopted from Lee and Aaker’s study (2004) (“1” representing “difficult to understand,” and “not at all detailed,” and “7” representing, “easy to understand,” and “extremely detailed”). In fact, one word from this scale was modified to increase participants’ understanding of this study’s questions (instead of “difficult/easy to process” from Lee and Aaker’s measure, the current research used “difficult/easy to think about”). Because the analysis of reliability among items showed low consistency when all items were included, the researcher included only two items (i.e., difficult/easy to understand and difficult/easy to think about). These two items showed a high degree of correlation, and were averaged to make an index for message fluency (correlation $r = .80$). The original mean scores were transformed to new mean values and squared ($10 - \text{original means}$) to produce normality and were used for data analysis (Tabachnick & Fidell, 2001).

Message elaboration is individuals' cognitive responses to the message that was going through their mind during message intake (Caccioppo et al., 1981; Shen & Dillard, 2010; Keller & Block, 1999). To measure participants' elaboration upon messages, two measures were used: thought-listing and secondary reaction time (STRTs). First, "a thought-list" measure (e.g., number of arguments that participants made, number of relevant thoughts about the messages, number of supportive thoughts, and number of refutation thoughts) was used (Meyers-Levy & Maheswaran, 2004; Petty & Cacioppo, 1986; Shen & Dillard, 2010; Yan et al., 2010) that asked participants to fill in four lines of the thought list after watching the PSA message, from the first thoughts in their mind to the fourth one.

Two independent coders analyzed participants' thought lists (see Appendix E). First, each coder was asked to read the guidelines of the coding procedure and examples, which were built and modified on the basis of Yan and colleague's study (2010). Each coder was asked to notify the researcher if he or she was unsure about any parts of the procedure, and problems were resolved before cognitive thoughts were analyzed. 30 participants' thought lists were assigned to check whether inter-coder reliability reached an acceptable level. On the basis of several scholars' recommendations, the researcher adopted a satisfactory level of reliability between the two coders: greater than 90% of level of agreement and greater than .75 of Cohen's Kappa (Fleiss, 1981; Landis & Koch, 1977; Yan et al., 2010).

After the coders identified cognitive thought units from each of the 30 participants, the coders then divided each thought into either a cognitive response or emotional response (Percent Agreement: 96 %, Cohen's Kappa: .76). As the examples in the guidelines showed, the cognitive response is associated more with participants' responses to the message and arguments, whereas the emotional response is only related to their feelings when responding to the advertisement and

its messages (e.g., it was scary). The next step involved dividing cognitive responses into either a relevant thought or an irrelevant thought to the main point of the message (Percent Agreement: 96 %, Cohen's Kappa: .80). For instance, the relevant thoughts are more about the message's argument and the message's source credibility; conversely, the irrelevant thoughts have no relation to any of the above-mentioned traits (e.g., I will have a cup of coffee this afternoon). Finally, the coders categorized the relevant cognitive responses into the categories of supportive arguments, counterarguments, or others (Percent Agreement: 93%, Cohen's Kappa: .87). A supportive argument is related to any positive evaluation of the message, such as perception of source credibility. A counterargument is more about negative judgment of the abovementioned message criteria. Any thoughts that do not belong to either of the two were coded as "other." In each step, coders showed a high level of reliability among each other; therefore, the researcher assigned each coder to analyze half of the remaining data within one month. Once all thought units were coded through these steps per each participant, his/her domain cognitive response was composed by subtracting his/her total number of counterarguments from his/her total numbers of supportive arguments (i.e., $M = .85$; Range = 15, Variance = 3.21)(Shen & Dillard, 2010).

One way to identify effortful message processing is to measure cognitive resource allocation through a *secondary task reaction time* (STRTs, Lang & Basil, 1998; Leshner, et al., 2010). The STRT is operationalized as the response time (in milliseconds) it takes respondents to press an assigned key after hearing an audio tone (Leshner, et al., 2010, p. 494). In general, to measure STRTs, participants are asked to complete two tasks at the same time, such as attend to a primary task (e.g., view the advertising messages) and simultaneously complete a secondary task (e.g., press the button as quickly as possible when you see a picture or hear a certain sound).

Then, the time difference between the moment the tone beeps and the moment the button is pushed is interpreted as the STRT.

While participants watched a PSA (i.e., a primary task), they were asked to respond to the audio tone as quickly as possible, as a secondary task. Consistent with the instructions used in previous literature (Leshner, et al., 2010), four audio tones (interchangeably used with STRTs probe) randomly played during the entire PSA's occurrence. The randomly activated STRT probe in each time period made sure that participants could not anticipate the probe's time location; this randomization therefore ensures the power of STRTs' validity in the real world (Lang et al., 2007). On the basis of the *MediaLab* program's instruction, the probes were inserted over the message. In particular, the first probe randomly occurred in five seconds after the message started and the fourth probe randomly played five seconds before the message ended to avoid possible confounding from message starts and ends (Lang et al., 2007; Leshner, et al., 2010). Stated differently, excluding 5 seconds before message onset and 5 seconds before message offset, the PSA message duration time was evenly divided by four. Participants then heard the first audio tone at 1/4 of the message, they heard the second audio tone at 2/4 of the messages, and the third and the last tone were generated at 3/4 and 4/4 of the messages respectively. The second probe as well as the third probe also randomly played. Each participant's responses were combined and averaged to construct an index of the STRT.

Measurements of dependent variables. Scholars indicate that *attitude* is the summarized information that contains “evaluations of issues, persons, objects, and possible course of action” (Eagly & Chaiken, 1993; Shen & Dillard, 2005, p. 435). It has been stated that attitude easily contributes to an increase of *behavioral intention*, which is defined as “a course of action that individuals aim to follow” (Fazio & Williams, 1986; Fishbein & Ajzen, 1975; Shen &

Dillard, 2005, p. 435). In this research, several measures for attitudes and behavioral changes were adopted from previous studies to measure how participants evaluate the issue of binge drinking and message, as well as how much they show their intention to adopt the recommendation or change their drinking habits.

In order to measure *attitudes toward the message*, participants were asked to evaluate their perception of the message on four, 7-point Likert-type scales ranging from 1 (“strongly disagree”) to 7 (“strongly agree”). These items were adopted from Shen and Dillard (2007) and modified for this study. The degree to which participants evaluated their attitudes for the following questions, “I support what the message was trying to accomplish,” “I agree with the position advocated in the message,” “I am favorable toward the main point of the message,” and “Knowing when to stop drinking is effective to maintain good health,” were measured. The higher scores therefore mean more positive attitudes toward the message. The values of Cronbach’s alpha for attitudes toward the message reached an acceptable level of internal consistency (Cronbach’s $\alpha = .84$).

Attitudes toward binge drinking were assessed using three 7-point semantic differential scales, including “acceptable/not acceptable,” “beneficial/not beneficial,” and “positive/negative” (Cho & Boster, 2008). Since drinking behavior is directly related to the participants’ health and societal approval, the researcher newly added two measures to examine how participants evaluate binge drinking in terms of its benefits and social acceptance (i.e., acceptable/not acceptable and beneficial/not beneficial). The higher value would indicate more negative attitudes toward binge drinking. The values from each question were averaged to construct an index, “attitudes toward binge drinking” (Cronbach’s $\alpha = .85$).

Participants were asked to assess their *behavioral intention to accept the messages' argument* on three 7-point Likert-type scales ranging from 1 (strongly disagree) to 7 (strongly agree). These items were adopted from Shen and Dillard (2007) and include: "I intend to act in ways that are compatible with the position advocated by the message," "I plan to act in ways that are consistent with the position advocated by the message," and "I am going to make an effort to do what the message asked me to do" (Shen & Dillard, 2007). Three items were averaged to build the indexes for the main experiment (Cronbach's $\alpha = .94$).

Participants' *intention to change their current drinking behaviors* was measured after the experiment through five items, such as "All things considered, I would very much like to change my drinking habits, such as binge drinking," "I am planning to change my drinking habit very soon," "I drink too much," "I intend to use alcohol regularly in the future," and "I don't plan to ever change my drinking behavior unless I see my health suffering," which were used in Cho and Boster's study (2008, p. 434) and Shin, Lee, and Chen's study (2005, p. 5). The scale ranged from 1 (definitely no) to 7 (definitely yes). Therefore, the score shows the change in subjects' behavioral intention to not drink after watching PSAs. Two of the items (i.e., I intend to use alcohol regularly in the future; I don't ever plan to change my drinking behavior unless I see my health suffering) in intention to change behavior were excluded from the index construction to reach an acceptable internal consistency (Cronbach's $\alpha = .71$).

CHAPTER 4: DATA ANALYSIS AND RESULTS

A series of 2 (regulatory focus: promotion vs. prevention) X 2 (message framing: gain vs. loss) X 2 (level of fear appeals: high vs. low) analyses of variances (ANOVA) and multiple regression analyses among independent variables, potential mediating variables, and dependent variables were conducted to examine the proposed research questions and hypotheses for this study.

Research Question 1: Regulatory Fit, Fears, and Defensive Tendencies

RQ1. Does the level of fear appeal influence the intensity of defensive tendencies (i.e. perception of personal relevance, perception of message reactance, and avoidance) under a regulatory fit condition?

Similar to the manipulation check analysis, the researcher performed a series of 2 (regulatory focus) \times 2 (message framing) \times 2 (level of fear appeals) ANOVAs to examine the role of fear between regulatory focus, message framing, and defensive tendencies (i.e., perceptions of message relevance, message reactance, and avoidance). Each defensive tendency was entered into ANOVA as the dependent variables, with three independent variables. First of all, H1.1 predicts that under the regulatory fit condition, participants in a high fear condition will express higher defensive tendencies than participants in a low fear condition, such as a) a lower perceived message relevance to themselves, b) more message reactance, and c) a higher avoidance tendency.

In terms of *perceptions of message relevance*, although the main effect of level of fear was significant, $F(1, 240) = 15.90, p < .01$, partial $\eta^2 = .06$, the three-way interaction among regulatory focus, message framing, and level of fear was not significant, $F(1, 240) = 2.65, p > .05$, partial $\eta^2 = .01$, (see Table 2.1). These results indicate that participants who saw a low

threatening message ($M = 4.01$, $SE = .10$) perceived higher message relevance than participants who read a high threatening message ($M = 3.51$, $SE = .10$).

Table 2.1. Analysis of Variance for Personal Relevance

| Variable: Personal Relevance | | | |
|------------------------------|------|---------|----------|
| | df | F | η^2 |
| Fear (F) | 1 | 15.90** | .062 |
| Message Framing (M) | 1 | .55 | .002 |
| Regulatory Focus (R) | 1 | .31 | .001 |
| F \times M | 1 | .58 | .002 |
| M \times R | 1 | 1.04 | .004 |
| R \times F | 1 | .00 | .000 |
| F \times M \times R | 1 | 2.65 | .011 |
| Error | 240 | (1.23) | |

Note. Entered number in parentheses is mean square errors. **: $p < .01$.

The non-significant three-way interaction effect among such the independent variables was also found in *reactance to the message*, $F(1, 240) = .00$, $p > .05$, partial $\eta^2 = .00$. The main effect of level of fear revealed that participants in the low fear condition ($M = 5.01$, $SE = .10$) evaluated messages more positively than participants in the high fear condition ($M = 4.65$, $SE = .10$), $F(1, 240) = 8.65$, $p < .05$, partial $\eta^2 = .04$. The ANOVA results, however, revealed that none of the two-way interactions between regulatory focus, message framing, and level of fear were significant in relation to message reactance (see Table 2.2).

Table 2.2. Analysis of Variance for Reactance to the Message

| | Variable: Reactance to the Message | | |
|-------------------------|------------------------------------|--------|----------|
| | df | F | η^2 |
| Fear (F) | 1 | 8.65** | .035 |
| Message Framing (M) | 1 | 4.29* | .018 |
| Regulatory Focus (R) | 1 | 1.08 | .004 |
| F \times M | 1 | 1.15 | .005 |
| M \times R | 1 | .89 | .003 |
| R \times F | 1 | .23 | .001 |
| F \times M \times R | 1 | .00 | .000 |
| Error | 240 | (1.29) | |

Note. Entered number in parentheses is mean square errors. *: $p < .05$, **: $p < .01$.

The analysis of *avoidance tendency* with the message also revealed a non-significant three-way interaction effect among these independent variables, $F(1, 240) = .40$, $p > .05$, partial $\eta^2 = .00$ (see Table 2.3). Interestingly, the mean scores for avoidance tendency did not differ between the low fear and high fear conditions, $F(1, 240) = .17$, $p > .05$, partial $\eta^2 = .00$.

Because of the non-significant three-way interaction effects among the three independent variables for these three defensive tendencies, no post hoc tests were conducted to see whether there would be further differences across the conditions. In other words, once participants were exposed to certain message attributes (i.e., level of fear), their defensive tendencies toward messages did not differ based on the experience of fit. Consequently, hypothesis 1.1 was not supported.

Table 2.3. Analysis of Variance for Avoidance Tendency

| | Variable: Avoidance Tendency | | |
|----------------------|------------------------------|-------------------|----------|
| | <i>df</i> | <i>F</i> | η^2 |
| Fear (F) | 1 | .17 | .001 |
| Message Framing (M) | 1 | .10 | .000 |
| Regulatory Focus (R) | 1 | 2.82 ⁺ | .012 |
| F × M | 1 | .06 | .000 |
| M × R | 1 | .41 | .002 |
| R × F | 1 | .00 | .000 |
| F × M × R | 1 | .40 | .002 |
| Error | 240 | (1.37) | |

Note. Entered number in parentheses is mean square errors. ⁺: $p < .10$.

In a similar vein, hypotheses 1.2 and 1.3 were not supported. Hypothesis 1.2 and 1.3 posited that defensive tendencies would not differ under a high fear condition regardless of the fit between regulatory focus and message frame. However, under a low fear condition, the regulatory fit may reduce the defensive avoidance to some extent. Neither two-way interaction effects nor three-way interaction were revealed from the ANOVA analysis, therefore; the results indicated that the connections between regulatory fit and the defensive tendencies did not differ between the low fear and high fear condition.

Furthermore, the researcher used a regression approach to examine the extent to which perception of personal relevance, reactance to the message, and avoidance tendency affected the four persuasion variables. The findings will be provided in the results section for research

question 4, which examines the mediating role of defensive tendencies and message processing between regulatory fit and persuasion.

Research Question 2: Regulatory Fit, Fears, and Message Processing

RQ2. Does the level of fear influence message elaboration (i.e., message processing fluency, elaboration upon message, and STRTs) under a regulatory fit condition?

A similar 2 (regulatory focus) X 2 (message framing) X 2 (level of fear) ANOVAs were conducted several times to examine the role of fears between regulatory fit and message elaboration (i.e., message processing fluency, elaboration upon message, and STRTs). Hypothesis 2.1 expected that participants in the high fear condition would process the message less systematically than participants in the low fear condition even when their regulatory focus was compatible with the message framing.

Regarding *message processing fluency*, the ANOVA analysis revealed a main effect of fear appeal, $F(1, 240) = 32.24, p < .05$, partial $\eta^2 = .12$ (see Table 3.1). In particular, participants who were exposed to a low fear threatening message ($M = 1.88, SE = .02$) perceived the message as being much easier to understand than participants who read a high fear threatening message ($M = 2.03, SE = .02$). The results additionally indicated a significant three-way interaction among regulatory focus, message framing, and level of fear, $F(1, 240) = 6.57, p < .05$, partial $\eta^2 = .03$ (see Table 3.1).

The result of the post hoc test showed that participants with a promotion focus who were exposed to gain-framed messages ($M = 6.65, SE = .15$) and participants with a prevention focus who were exposed to loss-framed messages ($M = 6.66, SE = .15$) under the condition of a low fear reported more fluent processing of the messages than promotion-oriented participants who read a gain framed message ($M = 5.78, SE = .16$) and prevention-oriented participants who read a

loss framed message ($M = 5.83$, $SE = .15$) under the condition of a high fear appeal (See Table 3.2).

Table 3.1. Analysis of Variance for Message Processing Fluency

| Variable: Message Processing Fluency | | | |
|---|-----------|---------------------|-----------------------|
| | <i>df</i> | <i>F</i> | <i>η</i> ² |
| Fear (F) | 1 | 32.24 ^{**} | .118 |
| Message Framing (M) | 1 | .00 | .000 |
| Regulatory Focus (R) | 1 | .04 | .000 |
| F × M | 1 | .07 | .000 |
| M × R | 1 | 3.99 [*] | .016 |
| R × F | 1 | .01 | .000 |
| F × M × R | 1 | 6.57 [*] | .027 |
| Error | 240 | (.04) | |

Note. Entered number in parentheses is mean square errors. *: $p < .05$, **: $p < .01$.

Moreover, participants who read compatible message with their regulatory focus indicated much easier processing of the message than participants who read incompatible message under the condition of low fear (see Table 3.2).

Going into detail, when participants with a promotion focus were exposed to the gain frame, they evaluated their message processing more positively ($M = 6.65$, $SE = .15$) than participants with a promotion focus who were exposed to the loss frame ($M = 6.11$, $SE = .15$). For participants with a prevention focus, the experience of regulatory fit also influenced their

message processing positively (i.e., the condition of the fit; $M = 6.66$, $SE = .15$ versus the condition of the nonfit; $M = 6.12$, $SE = .15$).

Table 3.2. Summary for Message Processing Fluency as a Function of Regulatory Fit and Fears

| Message Framing | | Regulatory Focus | | | |
|-----------------|------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|
| | | Promotion | | Prevention | |
| | | Gain | Loss | Gain | Loss |
| Fear | High | 5.78 _{aA} (.16) | 5.87 _{aA} (.15) | 5.83 _{aA} (.16) | 5.83 _{aA} (.15) |
| | Low | 6.65 _{bA} (.15) | 6.11 _{aB} (.15) | 6.12 _{aB} (.15) | 6.66 _{bA} (.15) |

Note. $N = 248$. Mean values are entered with standard errors in parentheses. The higher mean scores indicate better fluency and ease in understanding. Within rows, cell means that do not share upper subscripts indicate that the mean scores are significantly different at the $p < .05$ level. Within columns, cell means with no lower subscripts in common differ at $p < .05$ in Holm's sequential bonferroni post hoc test comparison.

However, the result of the post hoc test showed that the experience of fit did not differentiate between participants' message processing fluency under a high fear condition. In particular, participants who read compatible message with their regulatory focus evaluated their message processing slightly similar to participants who read incompatible message under the condition of high fear (see Table 3.2).

Similar to the message processing results, the main effect of fear on *message elaboration* appeared significant. For instance, more cognitive processing occurred in the low fear condition ($M = 1.23$, $SE = .15$) than in the high fear condition ($M = .43$, $SE = .16$), $F(1, 240) = 13.22$, $p < .01$, partial $\eta^2 = .05$. However, no two-way interaction effects among such independent

variables nor the three-way interaction, $F(1, 240) = .03, p > .05$, partial $\eta^2 = .00$, were significant (see Table 3.3).

Table 3.3. Analysis of Variance for Elaboration upon Message

| | Variable: Message Elaboration | | |
|-------------------------|-------------------------------|----------|----------|
| | <i>df</i> | <i>F</i> | η^2 |
| Fear (F) | 1 | 13.22 ** | .052 |
| Message Framing (M) | 1 | 3.00 + | .012 |
| Regulatory Focus (R) | 1 | 3.76 + | .015 |
| F \times M | 1 | 3.16 | .013 |
| M \times R | 1 | .82 | .003 |
| R \times F | 1 | 1.12 | .005 |
| F \times M \times R | 1 | .03 | .000 |
| Error | 240 | (2.99) | |

Note. Entered number in parentheses is mean square errors. +: $p < .10$, *: $p < .05$, **: $p < .01$.

The result of STRTs also revealed that participants in the low fear STRT ($M = 525.06$, $SE = 11.37$) used more cognitive resources when processing messages than participants in the high fear condition ($M = 496.17$, $SE = 11.84$), $F(1, 240) = 3.01, p = .08$, partial $\eta^2 = .01$. The same analysis also showed significant three-way interaction effects between regulatory focus, message framing, and fear, $F(1, 240) = 4.61, p < .05$, partial $\eta^2 = .02$ (see Table 3.4).

The post hoc comparison revealed that the significant difference was found for participants with a promotion focus who read a gain-framed message, under the condition of low fear ($M = 568.91$, $SE = 22.79$) and under the condition of high fear ($M = 484.52$, $SE = 24.81$).

Table 3.4. Analysis of Variance for STRTs

| | Dependent Variable: STRTs | | |
|-------------------------|---------------------------|-------------------|----------|
| | df | F | η^2 |
| Fear (F) | 1 | 3.01 ⁺ | .013 |
| Message Framing (M) | 1 | .33 | .001 |
| Regulatory Focus (R) | 1 | .16 | .001 |
| F \times M | 1 | .30 | .001 |
| M \times R | 1 | 3.19 ⁺ | .013 |
| R \times F | 1 | .40 | .002 |
| F \times M \times R | 1 | 4.86 [*] | .020 |
| Error | 240 | (16620.01) | |

Note. Entered number in parentheses is mean square errors. ⁺: $p < .10$, ^{*}: $p < .05$.

Although participants with a prevention focus experienced the similar regulatory fit through reading a loss framed message, there was no difference in terms of STRTs between under the condition of low fear ($M = 546.69$, $SE = 23.26$) and under the condition of high fear ($M = 500.93$, $SE = 22.79$) (See Table 3.5). Moreover, participants who experienced the fit more slowly responded to a secondary task (i.e., a promotion focus with gain-framing; $M = 568.91$, SE

= 22.79) than participants who did not experience the fit (i.e., a promotion focus with loss-framing; $M = 485.01$, $SE = 21.79$), in the low fear condition.

Moreover, the significant three-way interaction effects among independent variables on both message processing fluency and STRTs showed that high fear relatively diminished the regulatory fit effects on message elaboration in comparison to low fear. Therefore, hypothesis 2.1 was partially supported.

Table 3.5. Summary for STRTs as a Function of Regulatory Fit and Fears

| | | Regulatory Focus | | | |
|-----------------|------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|
| | | Promotion | | Prevention | |
| Message Framing | | Gain | Loss | Gain | Loss |
| Fear | High | 484.52 _{aA} (24.81) | 490.97 _{aA} (23.15) | 508.28 _{aA} (23.94) | 500.93 _{aA} (22.79) |
| | Low | 568.91 _{bB} (22.79) | 485.01 _{aA} (21.79) | 499.61 _{aA} (23.16) | 546.69 _{aA} (23.16) |

Note. $N = 248$. Mean values are entered with standard errors in parentheses. The STRTs were measured in milliseconds. The higher value means a slower response to the audio tone. Using Holm's sequential bonferroni post hoc test comparison, within rows, mean scores with upper case subscripts that do not share subscripts differ at $p < .05$, and within columns, mean values that do not have the same lower case subscripts differ at the $p < .05$ level.

Hypothesis 2.2 proposed that when participants were exposed to high fear appeal, message elaboration would not differ between participants in the fit condition and participants in the non-fit condition. In contrast, Hypothesis 2.3 posited that message processing would be different between the fit condition and the non-fit condition, in the low fear condition.

Overall, the post hoc results showed that regulatory fit is an important factor that might enhance attention and ability to understand messages, in the low fear condition; however, such

positive associations between fit and message processing disappeared once participants were exposed to high fear appeal. Because such tendencies were not found in terms of message elaboration, the results partially supported hypothesis 2.2 and 2.3.

To investigate the relationship between potential mediators (i.e., message elaboration and STRTs), a series of multiple regressions were conducted using two message-processing measures as predictors of the dependent measures of attitudes toward messages, behavioral intention, attitudes toward drinking, and intention not to drink. The results will be illustrated in the discussion on the mediating variable analyses under research question 4.

Research Question 3: Regulatory Fit, Fears, and Persuasion

RQ3. Does the level of fear appeal influence persuasion (i.e., attitudes toward binge drinking, attitudes toward messages, behavioral intention, and intention to not consume alcohol) under a regulatory fit condition?

The researcher conducted a similar 2 (regulatory focus) X 2 (message framing) X 2 (level of fears) ANOVAs with the four persuasion-related dependent variables to examine whether level of fear influences persuasion. Hypothesis 3.1 predicts participants would have a) more favorable attitudes toward messages, b) less favorable attitudes toward binge drinking, c) high intentions not to drink a lot, and d) high intentions to accept the recommendation in the low fear condition rather than in the high fear condition when participants experienced regulatory fit.

First of all, the significant main effect of fear, $F(1, 240) = 13.89, p < .01$, partial $\eta^2 = .06$, and the two-way interaction between message framing and regulatory focus, $F(1, 240) = 4.10, p < .05$, partial $\eta^2 = .02$, were significant (see Table 4.1.). Regardless of regulatory fit, participants in the low fear condition ($M = 6.03, SE = .07$) expressed more positive attitudes toward the presented messages than participants in the high fear condition ($M = 5.63, SE = .08$).

In addition, the post hoc test comparison revealed that the three-way interaction among these independent variables significantly influenced attitudes toward messages, $F(1, 240) = 4.56$, $p < .05$, partial $\eta^2 = .02$.

Table 4.1. Analysis of Variance for Attitudes toward Messages

| | Dependent Variable: Attitudes toward Messages | | |
|-------------------------|---|----------|----------|
| | <i>df</i> | <i>F</i> | η^2 |
| Fear (F) | 1 | 13.89 ** | .055 |
| Message Framing (M) | 1 | .39 | .002 |
| Regulatory Focus (R) | 1 | .02 | .000 |
| F \times M | 1 | .05 | .000 |
| M \times R | 1 | 4.10 * | .017 |
| R \times F | 1 | .11 | .00 |
| F \times M \times R | 1 | 4.56 * | .019 |
| Error | 240 | (.71) | |

Note. Entered number in parentheses is mean square errors. *: $p < .05$, **: $p < .01$.

Under a condition of fit, participants in a high fear condition (i.e., a promotion focus with gain-framing; $M = 5.62$, $SE = .16$ as well as a prevention focus with loss-framing; $M = 5.63$, $SE = .15$) evaluated the message less positively than participants in a low fear condition (i.e., a promotion focus with gain-framing; $M = 6.31$, $SE = .15$ as well as a prevention focus with loss-framing; $M = 6.20$, $SE = .15$). The results also indicated that the experience of fit did not differentiate between participants' perceptions of attitudes toward messages in the high fear

condition. In contrast, when the messages conveyed low threatening attributes, more positive attitudes toward messages were observed in the fit condition than in the non-fit condition (see Table 4.2).

Table 4.2. Summary for Attitudes toward Messages as a Function of Regulatory Fit and Fears

| | | Regulatory Focus | | | |
|-----------------|------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|
| | | Promotion | | Prevention | |
| Message Framing | | Gain | Loss | Gain | Loss |
| Fear | High | 5.62 _{aA} (.16) | 5.59 _{aA} (.15) | 5.68 _{aA} (.16) | 5.63 _{aA} (.15) |
| | Low | 6.31 _{bA} (.15) | 5.77 _{aB} (.14) | 5.84 _{aB} (.15) | 6.20 _{bA} (.15) |

Note. $N = 248$. Mean values are entered with standard errors in parentheses. Attitudes toward the messages were measured on 7-point scales (1= strongly disagree, 7= strongly agree). The higher mean scores indicate more positive attitudes toward the message. Using Holm's sequential bonferroni post hoc test comparison, within rows, mean scores with upper case subscripts that do not share subscripts differ at $p < .05$, and within columns, mean values that do not have the same lower case subscripts differ at the $p < .05$ level.

Regarding *attitudes toward binge drinking*, neither a main effect of message framing and regulatory focus nor two-way interaction effects were revealed from the ANOVA analysis. However, a significant main effect of fear was reported that represents more negative attitudes toward binge drinking in the low fear condition ($M = 6.45$, $SE = .07$) rather than in the high fear condition ($M = 6.24$, $SE = .07$). In addition, the significant three-way interactions among independent variables was found, $F(1, 240) = 11.15$, $p < .01$, partial $\eta^2 = .04$ (see Table 4.3).

Particularly, the post hoc tests confirmed that participants who experienced the fit evaluated the behavior of drinking more negatively under a low fear condition (i.e., a promotion

focus with gain-framing; $M = 6.65$, $SE = .13$ as well as a prevention focus with loss-framing; $M = 6.60$, $SE = .13$), rather than under a high fear condition (i.e., a promotion focus with gain-framing; $M = 5.96$, $SE = .14$ as well as a prevention focus with loss-framing; $M = 6.28$ $SE = .14$).

Table 4.3. Analysis of Variance for Attitudes toward Binge Drinking

| Dependent Variable: Attitudes toward Binge Drinking | | | |
|---|------|---------|----------|
| | df | F | η^2 |
| Fear (F) | 1 | 5.33* | .022 |
| Message Framing (M) | 1 | 1.26 | .005 |
| Regulatory Focus (R) | 1 | .00 | .000 |
| $F \times M$ | 1 | 1.76 | .007 |
| $M \times R$ | 1 | .07 | .000 |
| $R \times F$ | 1 | .08 | .000 |
| $F \times M \times R$ | 1 | 11.15** | .044 |
| Error | 240 | (.55) | |

Note. Entered number in parentheses is mean square errors. *: $p < .05$, **: $p < .01$.

In the low fear condition, the experience of regulatory fit created more negative attitudes toward binge drinking only for participants with a promotion focus, not for participants with a prevention focus (see Table 4.4). However, under the high fear condition, attitudes toward binge drinking did not differ between the fit condition and the non-fit condition.

In relation to *behavioral intention to accept the recommendation*, the three-way interaction effects was also significant, $F(1, 240) = 6.99$, $p < .05$, partial $\eta^2 = .03$ (see Table 4.5).

Consistent with participants' attitudes toward the messages and binge drinking, the results also indicated the significant main effect of level of fears, $F(1, 240) = 14.91, p < .05$, partial $\eta^2 = .06$.

Table 4.4. Summary for Attitudes toward Binge Drinking as a Function of Regulatory Fit and Fears

| | | Regulatory Focus | | | |
|-----------------|------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|
| | | Promotion | | Prevention | |
| Message Framing | | Gain | Loss | Gain | Loss |
| Fear | High | 5.96 _{aA} (.14) | 6.48 _{aA} (.13) | 6.28 _{aA} (.14) | 6.22 _{aA} (.13) |
| | Low | 6.65 _{bB} (.13) | 6.29 _{aA} (.13) | 6.28 _{aA} (.13) | 6.60 _{bA} (.13) |

Note. $N = 248$. Mean values are entered with standard errors in parentheses. Attitudes toward binge drinking were measured on 7-point semantic differential scales (e.g., 1 = acceptable, 7 = non acceptable). The higher mean scores mean more negative attitudes toward binge drinking. Using Holm's sequential bonferroni post hoc test comparison, within rows, mean scores with upper case subscripts that do not share subscripts differ at $p < .05$, and within columns, mean values that do not have the same lower case subscripts differ at the $p < .05$ level.

Moreover, the post hoc results indicated that a similar pattern was observed such that participants under a low fear condition (i.e., a promotion focus with gain-framing; $M = 5.46, SE = .22$ as well as a prevention focus with loss-framing; $M = 5.38, SE = .22$) expressed more intention to adopt the recommendation than participants under a high fear condition (i.e., a promotion focus with gain-framing; $M = 4.43, SE = .24$ as well as a prevention focus with loss-framing; $M = 4.37, SE = .22$) (see Table 4.6).

In addition, the post hoc tests confirmed that participants who experienced the fit showed more intention to adopt the recommendation (i.e., a promotion focus with gain-framing; $M = 5.46, SE = .22$ as well as a prevention focus with loss-framing; $M = 5.38, SE = .22$) than

participants who experienced the nonfit (i.e., a promotion focus with gain-framing; $M = 4.86$, $SE = .21$ as well as a prevention focus with loss-framing; $M = 4.77$ $SE = .22$).

Table 4.5. Analysis of Variance Table for Behavioral Intention

| | Dependent Variable: Behavioral Intention | | |
|-------------------------|--|----------|----------|
| | df | F | η^2 |
| Fear (F) | 1 | 14.91 ** | .058 |
| Message Framing (M) | 1 | .12 | .001 |
| Regulatory Focus (R) | 1 | .02 | .001 |
| F \times M | 1 | .15 | .001 |
| M \times R | 1 | 1.52 | .006 |
| R \times F | 1 | .19 | .001 |
| F \times M \times R | 1 | 6.99 * | .028 |
| Error | 240 | (1.51) | |

Note. Entered number in parentheses is mean square errors. *: $p < .05$, **: $p < .01$.

The results also showed that the experience of fit did not differentiate participants' behavioral intention in the high fear condition (see Table 4.6). Although three dependent variables (i.e., attitude toward messages, behavioral intention, and attitudes toward binge drinking) showed that experiencing regulatory fit positively influenced persuasion in the low fear condition, no significant three-way interactions were found for *intention to not drink alcohol*, $F(1, 240) = .01$, $p > .05$, partial $\eta^2 = .00$ (see Table 4.7).

In other words, once participants were exposed to certain message attributes, their intention to not consume alcohol did not differ depending on the experience of fit.

Table 4.6. Summary for Behavioral Intention as a Function of Regulatory Fit and Fears

| | | Regulatory Focus | | | |
|-----------------|------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|
| | | Promotion | | Prevention | |
| Message Framing | | Gain | Loss | Gain | Loss |
| Fear | High | 4.43 _{aA} (.24) | 4.54 _{aA} (.22) | 4.70 _{aA} (.23) | 4.37 _{aA} (.22) |
| | Low | 5.46 _{bB} (.22) | 4.86 _{aA} (.21) | 4.77 _{aA} (.22) | 5.38 _{bB} (.22) |

Note. $N = 248$. Mean values are entered with standard errors in parentheses. Behavioral intention to accept the messages' argument was measured on 7-point scales (1 = strongly disagree, 7 = strongly agree). The higher score indicated more intention to adopt the recommendation. Using Holm's sequential bonferroni post hoc test comparison, within rows, mean scores with upper case subscripts that do not share subscripts differ at $p < .05$, and within columns, mean values that do not have the same lower case subscripts differ at the $p < .05$ level.

Hypothesis 3.2 posited that persuasion would not be different between the fit condition and the non-fit condition, in the high fear condition. A series of post hoc results showed that high fear relatively diminished the regulatory fit effects on persuasion.

Additionally, the results supported that participants who experienced the fit evaluated the behavior of drinking more negatively, expressed more intention to adopt the recommendation, and evaluated the message more positively than participants who experience the nonfit. Therefore, the results of attitude toward messages, behavioral intention, and attitudes toward binge drinking partially supported hypothesis 3.2 and 3.3.

Table 4.7. Analysis of Variance Table for Intention to not Consume Alcohol

| | Dependent Variable: Intention | | |
|-------------------------|-------------------------------|----------|----------|
| | <i>df</i> | <i>F</i> | η^2 |
| Fear (F) | 1 | .08 | .000 |
| Message Framing (M) | 1 | .18 | .001 |
| Regulatory Focus (R) | 1 | .00 | .000 |
| F \times M | 1 | 1.27 | .005 |
| M \times R | 1 | .73 | .003 |
| R \times F | 1 | 7.75* | .031 |
| F \times M \times R | 1 | .01 | .000 |
| Error | 240 | (1.99) | |

Note. Entered number in parentheses is mean square errors. *: $p < .05$.

Research Question 4: Possible Mediators

RQ4. Do defensive tendencies and message processing mediate the relationship between regulatory fit, a level of fear, and persuasion?

To examine whether the defensive tendencies and message processing variables mediated the effects of regulatory fit on persuasion, the researcher used Baron and Kenny's (1986) suggestions of the mediation analyses procedure. First, to examine this moderating role of level of fear between regulatory fit and the four outcomes (i.e., attitudes toward the messages, behavioral intention, attitudes toward drinking, and intention to change behavior), the researcher conducted a series of regression analyses to reveal whether the connections between regulatory fit and the four outcomes differed between the low fear and high fear conditions.

A dummy-coded variable (i.e., 1 = regulatory fit; 0 = regulatory non-fit) was created to represents the variable of regulatory fit. Regardless of the level of fear appeal, participants with a prevention focus who were exposed to loss-framed messages and participants with a promotion focus who were exposed to gain-framed messages were coded as regulatory fit, and the other conditions were coded as regulatory non-fit. Second, the researcher filtered out all participants who were in the low fear condition. Then, a series of regression analyses examined the links between regulatory fit and each of the four persuasion-related dependent variables for participants in the high fear condition.

Except for the attitudes toward binge drinking variable, a series of regression results showed that persuasion would not differ between participants in the fit condition and participants in the non-fit condition. In the high fear condition, the regulatory fit experience was not enough to predict people's intention to change behavior, attitude toward the message, and behavioral intention (see Table 5.1).

Table 5.1. Regression Analysis of the Effect of Regulatory Fit on Persuasion for High Fear

| Dependent Variables | Fit | | |
|---------------------------------|---------|-------|------|
| | β | R^2 | F |
| Intention to Change Behavior | -.07 | .01 | .58 |
| Attitudes toward Binge Drinking | -.19* | .04 | 4.18 |
| Attitude toward Message | -.01 | .00 | .00 |
| Behavioral Intention | -.08 | .01 | .68 |

Note. Standardized beta coefficients were entered. *: $p < .05$.

Moreover, after filtering out participants who read high fear-arousing messages, further regression analyses were conducted to examine the proposition. As Table 5.2 showed, the experience of regulatory fit positively predicted most persuasion variables. However, there was no relationship between the regulatory fit variable and participants' intention to change behavior.

Looking at the results of the regression analyses more cautiously, it is reasonable to conclude that the level of fear moderates the relationship between regulatory fit and persuasion to some extent. While the experience of regulatory fit was not a strong predictor of most persuasion variables in the high fear condition, the R^2 of the regression analyses for behavioral intention, attitudes toward message, and attitudes toward binge drinking were statistically significant in the low fear condition. Therefore, fear appeal seemed to operate as a moderating variable in this study.

Table 5.2. Regression Analysis of the Effect of Regulatory Fit on Persuasion for Low Fear

| Dependent Variables | Fit | | |
|--------------------------------|---------|-------|-------|
| | β | R^2 | F |
| Intention to Change Behavior | -.05 | .00 | .30 |
| Attitudes toward Message | .27** | .07 | 9.70 |
| Attitude toward Binge Drinking | .23** | .05 | 7.07 |
| Behavioral Intention | .31** | .10 | 13.29 |

Note. Standardized beta coefficients were entered. **: $p < .01$.

Second, the researcher examined a relationship between the predictors (i.e., regulatory focus, message framing, and level of fear) and three possible mediators (i.e., personal relevance

with the message, message processing fluency, and STRTs), as described in the analysis for the first and the second research questions. A dummy variable for regulatory fit was included in the regression analysis as a predictor after selecting participants who read high fear threatening messages.

In the high fear condition, such regression analyses revealed that regulatory fit was not a strong predictor for personal relevance, reactance to the message, and avoidance tendency (see Table 5.3).

Table 5.3. Regression Analysis of the Effect of Regulatory Fit on Defensive Tendencies for High Fear

| Defensive Tendencies Variables | Fit | | |
|--------------------------------|---------|-------|-----|
| | β | R^2 | F |
| Personal Relevance | -.030 | .001 | .11 |
| Reactance to the Message | .066 | .004 | .52 |
| Avoidance Tendency | -.007 | .000 | .01 |

Note. Standardized beta coefficients were entered.

Next, to investigate similar connections between regulatory focus and the three defensive tendencies in the low fear condition, the researcher filtered out participants in the high fear condition. The regression results showed that the R^2 of the regression analysis for *perception of personal relevance* ($R^2 = .039, p < .05$) was statistically significant (see Table 5.4). However, the Table 5.4 showed that the R^2 of *reactance to the message* and *avoidance tendency* was not significant. Stated differently, regulatory fit positively predicts the perception of personal relevance.

Table 5.4. Regression Analysis of the Effect of Regulatory Fit on Defensive Tendencies for Low Fear

| Defensive Tendencies Variables | Fit | | |
|--------------------------------|---------|-------|------|
| | β | R^2 | F |
| Personal Relevance | .197* | .039 | 5.15 |
| Reactance to the Message | .058 | .003 | .42 |
| Avoidance Tendency | -.083 | .007 | .88 |

Note. Standardized beta coefficients were entered. *: $p < .05$.

All of the regression analyses partially showed the possibility that the connections between regulatory fit and defensive tendencies differ from one group to the other depending on changes in fear level. However, interpretations about whether level of fear worked as a moderating variable should be made with caution because the researcher only found different connections between regulatory fit and participants' perception of personal relevance, not for the two other defensive tendencies.

The researcher also examined the moderating role of level of fear between regulatory fit and the three message-processing variables. Similar regression analyses were used for this analysis that had been used before. Similar steps were also adopted to investigate how the connections between regulatory fit and message processing differed depending on message attributes. The dummy code for regulatory fit was also entered into these regression analyses to find links to message-processing variables, and the researcher filtered out participants who were in the low fear condition before running the regression analyses.

The results showed that when participants were exposed to high fear appeal, message elaboration would not differ between participants in the fit condition and participants in the non-

fit condition. In the high fear condition, such regression analyses revealed that there was no relationship between regulatory fit and message processing (see Table 5.5).

Table 5.5. Regression Analysis of the Effect of Regulatory Fit on Message Processing for High Fear

| Message Processing Variables | Fit | | |
|------------------------------|---------|-------|-----|
| | β | R^2 | F |
| Message Processing Fluency | .036 | .001 | .15 |
| STRTs | -.025 | .001 | .07 |
| Elaboration upon Message | -.084 | .007 | .82 |

Note. Standardized beta coefficients were entered.

Then, the researcher changed the filter to participants in the high fear condition, which allowed further analyses to include only those participants in the low fear condition. A series of regressions were conducted using regulatory fit as a predictor of the message-processing variable (see Table 5.6).

The results showed that there were significant associations between regulatory fit and processing fluency, $F(1, 127) = 11.10$, $R^2 = .07$, $p < .05$, as well as between regulatory fit and STRTs, $F(1, 127) = 7.54$, $R^2 = .06$, $p < .05$ (see Table 5.6). These regression results lead to the conclusion that level of fear partially moderates the connection between regulatory fit and message processing. In the low fear condition, fit is an important factor that might enhance attention and ability to understand messages.

Table 5.6. Regression Analysis of the Effect of Regulatory Fit on Message Processing for Low Fear

| Message Processing Variables | Fit | | |
|------------------------------|---------|-------|-------|
| | β | R^2 | F |
| Message Processing Fluency | -.283* | .073 | 11.10 |
| STRTs | .237* | .056 | 7.54 |
| Elaboration upon Message | -.043 | .002 | .63 |

Note. Standardized beta coefficients were entered. . *: $p < .05$.

Third, to examine whether such mediators was related to the variables of persuasion, four persuasion-related dependent variables were regressed respectively on three possible mediators (i.e., personal relevance, message processing fluency, and STRTs).

In the high fear condition, a series of multiple regression analyses revealed that only one persuasion variable (i.e., intention to not drink) was significantly regressed onto personal relevance. The more participants perceived the message to be relevant to themselves, the more they reported lower intentions to drink alcohol (see Table 5.7).

Table 5.7. Regression Analysis of the Effect of Defensive Tendencies and Message Elaboration on Persuasion: High Fear

| Predictor Variables | Dependent Variables | | | |
|----------------------------|---------------------|------|------|------|
| | P1 | P2 | P3 | P4 |
| Personal Relevance | .40** | -.02 | .12 | -.10 |
| Message Processing Fluency | .09 | .05 | -.15 | .06 |
| STRTs | .06 | .05 | -.10 | .08 |

Note. Standardized beta coefficients were entered. . *: $p < .05$, **: $p < .01$. P1 = *intention to change behavior*, $F(3, 115) = 7.67$, Adjusted $R^2 = .17$, $p < .01$; P2 = *attitude toward binge drinking*, $F(3, 115) = .20$, Adjusted $R^2 = -.02$, $p > .05$; P3 = *attitudes toward message*, $F(3, 115) = .15$, Adjusted $R^2 = .02$, $p > .05$; P4 = *behavioral intention*, $F(3, 115) = .59$, Adjusted $R^2 = -.01$, $p > .05$.

In the low fear condition, processing fluency was significantly associated with three dependent variables: attitude toward binge drinking, attitudes toward the message, and behavioral intention (see Table 5.8). However, a similar regression analysis showed that there was only one correlation between STRTs and one dependent variable (i.e., behavioral intention). There was also a relationship between personal relevance and intention to change behavior as well as attitude toward the message. Such a connection was similar to the results in the high fear condition. Overall, the results partially supported hypothesis 1.4 and 2.4, which proposed significant correlations between defensive tendencies and persuasion as well as message elaboration and persuasion, respectively.

Table 5.8. Regression Analysis of the Effect of Defensive Tendencies and Message Elaboration on Persuasion: Low Fear

| Predictor Variables | Dependent Variables | | | |
|----------------------------|---------------------|--------|-------|--------|
| | P1 | P2 | P3 | P4 |
| Personal Relevance | .35** | -.12 | .18* | .07 |
| Message Processing Fluency | .00 | -.39** | -.33* | -.37** |
| STRTs | -.19* | -.02 | .04 | .04 |

Note. Standardized beta coefficients were entered. .+: $p < .10$, *: $p < .05$, **: $p < .01$. P1 = *intention to change behavior*, $F(3, 125) = 8.24$, Adjusted $R^2 = .15$, $p < .01$; P2 = *attitude toward binge drinking*, $F(3, 125) = 6.93$, Adjusted $R^2 = .12$, $p < .01$; P3 = *attitudes toward message*, $F(3, 125) = 8.53$, Adjusted $R^2 = .15$, $p < .01$; P4 = *behavioral intention*, $F(3, 125) = 7.67$, Adjusted $R^2 = .14$, $p < .01$.

The results of hypothesis 1.4 and hypothesis 2.4 indicated that only perception of relevance, message processing fluency, and STRTs emerged as possible predictors of persuasion. Consequently, as a final step, the researcher conducted a stepwise regression to see whether the intensity of the relationship between the independent variables and the dependent variables

diminished when controlling for these potential mediators. Such potential mediators were included in further mediation analyses as covariates, and each of the three dependent variables was entered into a series of hierarchical regressions. If the relationship between the independent variables and each dependent variable is less significant than when the mediators are included in the equation than when the mediators are not included in the equation, it is reasonable to conclude that the results support partial mediation.

A stepwise hierarchical regression was conducted to test the mediating role of personal relevance, STRTs, and message fluency. Once the researcher filtered out participants in the low fear condition, a dummy-coded predictor of regulatory fit was entered into the first step. The potential mediators were included in the second equation.

Table 5.9. Stepwise Multiple Regression Model of Persuasion: High Fear

| Model | P2 | | P3 | | P4 | |
|--------------------|---------|----------------|---------|----------------|---------|----------------|
| | β | <i>p value</i> | β | <i>p value</i> | β | <i>p value</i> |
| 1 (Constant) | | .000 | | .000 | | .000 |
| Regulatory Fit | -.186 | .043 | -.01 | <i>ns</i> | -.08 | <i>ns</i> |
| 2 (Constant) | | .000 | | .000 | | .021 |
| Regulatory Fit | -.187 | .044 | .00 | <i>ns</i> | -.07 | <i>ns</i> |
| Personal Relevance | -.025 | <i>ns</i> | -.10 | <i>ns</i> | .11 | <i>ns</i> |
| Message Fluency | .053 | <i>ns</i> | -.15 | <i>ns</i> | .00 | <i>ns</i> |
| STRTs | .050 | <i>ns</i> | .12 | <i>ns</i> | .05 | <i>ns</i> |

Note. *ns* means nonsignificant at $p < .10$ level. Standardized beta coefficients and p values were entered. P2 = *attitude toward binge drinking*: Model 1, $F(1, 117) = 4.18$, Adjusted $R^2 = .03$, $p < .05$; Model 2: $F(4, 114) = 1.20$, Adjusted $R^2 = .01$, $p > .05$. P3 = *attitudes toward message*: Model 1, $F(1, 117) = .004$, Adjusted $R^2 = -.01$, $p > .05$; Model 2, $F(4, 114) = 1.36$, Adjusted $R^2 = .01$, $p > .05$. P4 = *behavioral intention*: Model 1, $F(1, 117) = .68$, Adjusted $R^2 = -.00$, $p > .05$; Model 2: $F(4, 114) = .60$, Adjusted $R^2 = -.01$, $p > .05$.

As Table 5.9 reveals, there was only a relationship between regulatory fit and attitude toward binge drinking in the first equation ($\beta = -.186, p < .10$) and the second equation ($\beta = -.187, p < .05$). Regarding attitude toward binge drinking, neither personal relevance ($\beta = -.025, p > .05$) nor message fluency ($\beta = -.053, p > .05$) was a significant predictor of the outcome variable. Therefore, personal relevance, STRTs, and message processing did not play mediating roles between regulatory fit and the three dependent variables in the high fear condition.

Similar hierarchical regression analyses were conducted after changing the filter from participants in the low fear condition to participants in the high fear condition. The regression analyses from the first block and the second block yielded statistically significant results for attitude toward binge drinking (see Table 5.4). Controlling for personal relevance and message processing fluency, the relation between regulatory fit and attitude toward binge drinking in the second equation showed a smaller estimate ($\beta = .18, p < .10$) than the same relationship in the first equation ($\beta = .23, p < .01$). Since message fluency ($\beta = -.35, p < .01$) was the strongest predictor of attitudes toward binge drinking in the second block, the estimated relationship between regulatory fit and attitudes decreased because of the mediating role of message processing fluency.

Three potential mediators were also included into a series of regressions for attitudes toward the message. The hierarchical regression analysis of the second block showed that the estimated relation between regulatory fit and attitudes toward the message ($\beta = .15, p < .10$) was smaller than the first block ($\beta = .26, p < .01$). Stated differently, once the hierarchical regression included potential mediators into the equation, the main effect of regulatory fit on the dependent variable was not significant at the $p < .05$ level. Similar to the results of attitude toward binge

drinking, message fluency ($\beta = -.29, p < .01$) and personal relevance ($\beta = .16, p = .06$) were also significant predictors of attitude toward the message. Therefore, it seems that message fluency and personal relevance did partially mediate the effects of regulatory fit on attitudes toward the message in the low fear condition.

In addition, regarding behavioral intention, the overall model for the first and second equations was statistically significant (see Table 5.10). More specifically, the relationship between regulatory fit and behavioral intention was significant in the first equation ($\beta = .31, p < .01$); however, there was a decrease in the relationship between regulatory fit and behavioral intention in the second equation ($\beta = .21, p < .05$).

Table 5.10. Stepwise Multiple Regression Model of Persuasion: Low Fear

| Model | P2 | | P3 | | P4 | |
|--------------------|---------|----------------|---------|----------------|---------|----------------|
| | β | <i>p value</i> | β | <i>p value</i> | β | <i>p value</i> |
| 1 (Constant) | | .000 | | .000 | | .000 |
| Regulatory Fit | .23 | .009 | .26 | .002 | .31 | .000 |
| 2 (Constant) | | .000 | | .000 | | .000 |
| Regulatory Fit | .18 | .051 | .15 | .088 | .21 | .017 |
| Personal Relevance | -.15 | .090 | .16 | .060 | .04 | <i>ns</i> |
| Message Fluency | -.35 | .00 | -.29 | .001 | -.32 | .000 |
| STRTs | -.06 | <i>ns</i> | .00 | <i>ns</i> | -.01 | <i>ns</i> |

Note. *ns* means nonsignificant at $p < .10$ level. Standardized beta coefficients and p values were entered. P2 = *attitudes toward binge drinking*: Model 1, $F(1, 127) = 7.07$, Adjusted $R^2 = .05, p < .01$; Model 2: $F(4, 124) = 6.29$, Adjusted $R^2 = .14, p < .01$. P3 = *attitudes toward messages*: Model 1, $F(1, 127) = 9.70$, Adjusted $R^2 = .07, p < .01$; Model 2, $F(4, 124) = 7.24$, Adjusted $R^2 = .16, p < .01$. P4 = *behavioral intention*: Model 1, $F(1, 127) = 13.29$, Adjusted $R^2 = .09, p < .05$; Model 2: $F(4, 124) = 7.44$, Adjusted $R^2 = .17, p < .05$.

Because the regression results in the second equation showed that message fluency was the strongest predictor of behavioral intention ($\beta = -.31, p < .01$), the results indicated that message processing fluency also partially mediated the relationship between regulatory fit and behavioral intention, but no significant mediating roles were found for personal relevance ($\beta = .04, p > .10$) and STRTs ($\beta = -.01, p > .10$).

In sum, the results revealed that the level of fear partially moderates the relationship between regulatory fit, message elaboration, and persuasion. First, regulatory fit was a strong predictor of message fluency in the low fear condition; however, the same connection between these variables was not found in the high fear condition (see Figure 4 and Figure 5). In particular, under a low fear condition, the regulatory fit enhanced message elaboration to some extent; thereby participants who experienced fit more fluently understood and easily processed messages than participants who experienced nonfit. In contrast, under the high fear condition, regulatory fit did not predict participants' message processing fluency.

Second, the regression analyses on the three dependent variables revealed that, in the low fear condition, regulatory fit was positively associated with attitudes toward binge drinking, attitudes toward the message, and behavioral intention. In contrast, only regulatory fit was found to be a good predictor for intention to change behavior in the high fear condition. Particularly, under the low fear condition, participants who read compatible messages exhibited more positive assessment on the messages, more negative evaluations on the behavior of binge drinking, and higher intention to accept the recommendation than participants who read incompatible messages.

Third, in the low fear condition, the hierarchical regression analyses showed that an estimated connection between regulatory fit and the three dependent variables seemed to decrease when controlling for covariates in the second block. In these analyses, message

processing fluency consistently worked as the strongest predictor of attitudes toward binge drinking, attitudes toward message, and behavioral intention. However, no significant connection among regulatory fit, message processing fluency, and these dependent variables were found in the high fear condition. Therefore, in addition to the moderating role of fear between regulatory fit and persuasion, message processing fluency generally mediated the relationship between regulatory fit and attitudes/behavioral intention in the low fear condition. In the low fear condition, participants who experienced the fit more fluently and carefully processed the tailored message than participants who experienced the nonfit. As a result, those participants considered the tailored messages more valuable and were willing to adopt the recommended behavior (see Figure 4 and Figure 5). However, such merits of tailored message disappeared once the messages contained a high threatening image and message. Therefore, regulatory fit did not predict message fluency as well as attitudes/behavioral intention in the high fear condition.

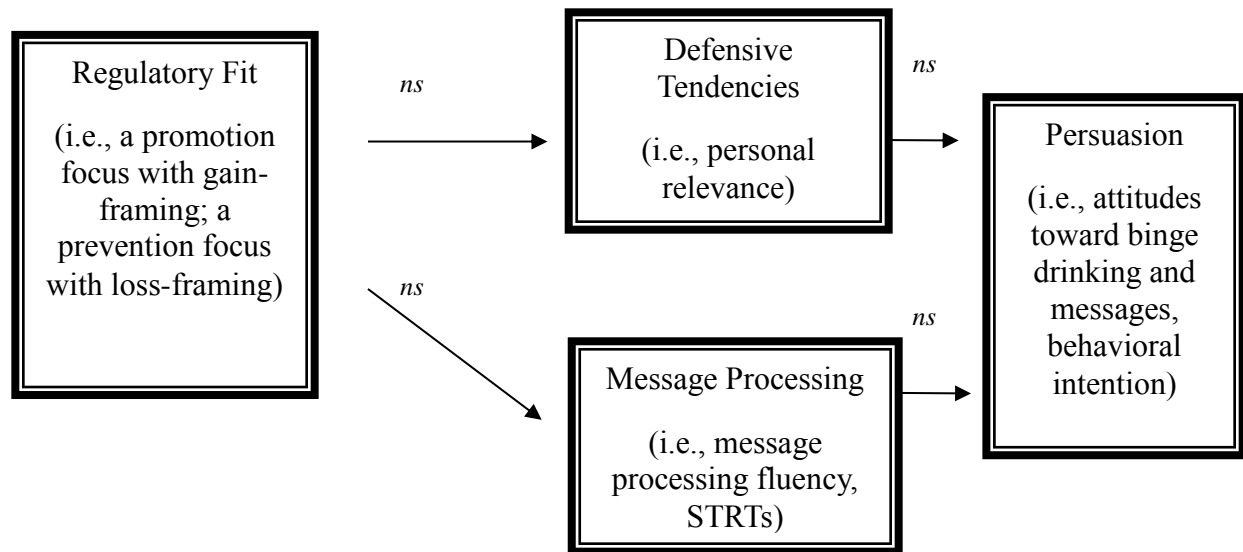


Figure 4. Under a High Fear Appeal
Note. *ns* means nonsignificant at $p < .05$ level.

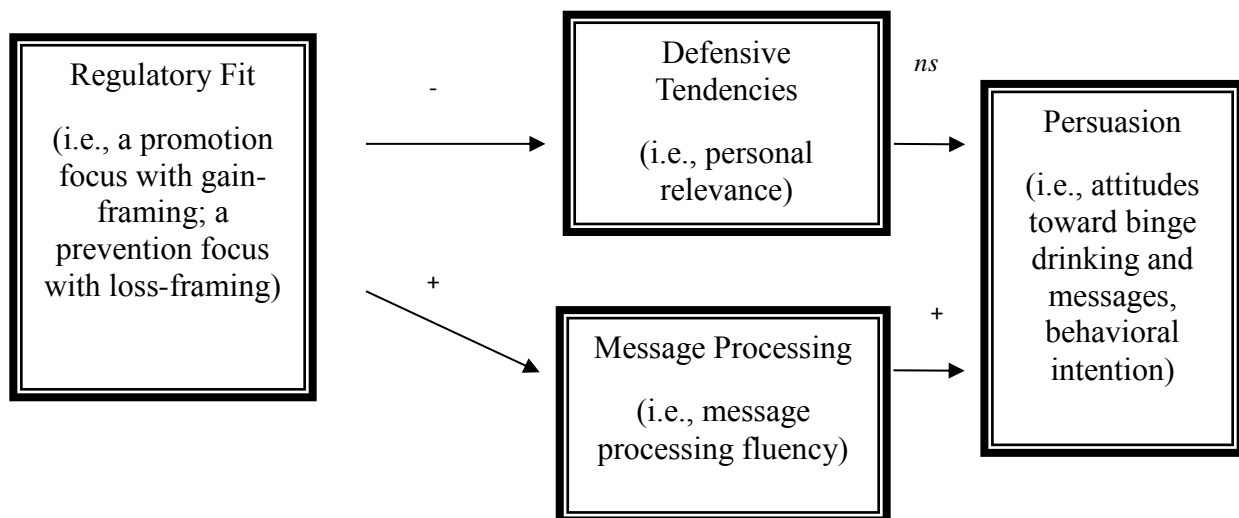


Figure 5. Under a Low Fear Appeal
Note. *ns* means nonsignificant at $p < .05$ level.

CHAPTER 5: DISCUSSION AND IMPLICATIONS

As a potentially successful way to persuade young people, the researcher paid attention to the studies and discussion of regulatory fit, in which a match is created between the message frame and individuals' concerns and interests. The work on regulatory fit to date suggests that tailoring messages to how participants tend to think of information and their environment can enhance persuasion in terms of recipients' higher valuation of behaviors advocated in the messages. In other words, people who experience the fit have a more favorable attitude toward the recommended behaviors and express a higher intention to engage in the behaviors and further change their behaviors. Previous studies of the fit experience indicate that people who experience regulatory fit tend to engage in systematic information processing and more fluently process the messages due to enhanced feelings of personal relevance and motivation. However, no empirical studies have investigated the intensity of regulatory fit effects under various media circumstances that may interrupt individuals' perceptions of messages and distract their processing of information. In this light, the researcher attempted to expand the current framework of regulatory fit by adding the discussion of the effects of emotional content on health-related messages.

Regarding the effects of fear, scholars indicate that highly emotional graphics and sounds can interrupt receivers' processing of messages and cause defensive tendencies toward these messages. Moreover, when broader implications of regulatory fit are considered, it is not quite applicable to generalize the effect of a text-based regulatory fit condition from previous studies to situations involving video-based PSAs. Therefore, this study aimed to explore the effects of emotional content (i.e., fear appeals) in tailored messages on message processing, message avoidance, and persuasion in televised PSAs context. The main assumption of the dissertation was that the relatively strong persuasion effect from regulatory fit versus misfit could diminish if

people's defensive reactions simultaneously occur as a result of exposure to fear appeals (Keller & Block, 1996). If that is the case, a cautious combination of appeals and regulatory fit are needed to enhance persuasion, especially for practical purposes.

Focusing on this possibility, the current study mainly investigated whether the level of fear moderates the relationship between regulatory fit and persuasion. In this process, the researcher also attempted to clarify the underlying mechanisms (i.e., mediators), such as message processing and defensive avoidance that preclude persuasion in some circumstances. From the findings, the researcher suggests several theoretical and practical implications that expand the current discussion of regulatory focus and provides suggestions for effective health campaign strategies when using tailored communication. More detailed discussion of the findings and suggestions for future studies are presented in the following sections.

The Moderating Effect of Fear Appeal in Tailored Messages on Persuasion

Consistent with accumulative findings, my research found that the experience of regulatory fit enhances message effectiveness depending on the message frames and the severity of fears in terms of attitudes toward messages, behavioral intention, and attitudes toward binge drinking (Cesario et al., 2004; Mann et al., 2004; Updegraff et al., 2007). Particularly, the results showed that the positive effects of regulatory fit versus nonfit were observed for the messages that contained a low level of fear, not for the messages that deliver a high level of fear. Under a low fear condition, when gain-framed information was presented, participants with a promotion focus indeed evaluated the messages more positively, the behavior of binge drinking more negatively, and their intention to accept the recommendation more highly than participants with a prevention focus. A similar tendency of regulatory fit effects was observed when participants with a prevention focus were exposed to a loss-frame. In the regulatory fit condition, participants

who were exposed to a low level of fear also evaluated the messages much more effectively in comparison to participants who were exposed to a high level of fear. In this light, the results generally support the possibility that the level of fear tends to moderate the relationship between regulatory fit and attitudes as well as behavioral intentions.

Failure to find the benefits of regulatory fit under the high fear condition does not necessarily imply that the current discussion of the fit should be discounted, rather that message attributes may have complicated participants' message processing. When stimuli are only conveyed as verbal information, such as with the textual description of a health threat, it is easy for message recipients to recognize whether the message suits their interests or not; thereby they can process the tailoring message more deliberately. However, the impact of the combination of message attributes on tailored messages brings up the importance of considering the degree to which audiences experience emotionally-involved reactions, as well as how this experience influences further message processing. As this study's findings show, tailored messages' persuasiveness under a low fear condition was largely due to participants' perceived relevance of the messages and their confidence in processing the messages. Conversely, tailored messages that matched participants' regulatory focus under a high fear condition were perceived as irrelevant and consequently ignored without further deliberative processing. These findings were consistent with the tendency of fear control in the EPPM which showed how individuals control the perceived severity of the threat to maintain their status quo. The EPPM particularly tried to uncover why the effect of fears can be diminished under certain cases by understanding individuals' defensive responses, which can lead to attitude or behavioral changes. In this study, the results provided the possibility that even tailored messages are ineffective because of participants' defensive tendencies (e.g., less

message processing and less personal relevance) responding to a high fear appeal. In particular, participants under a high fear condition tended to activate their fear control regardless of message tailoring in order to moderate their negative feelings from fears. In terms of theoretical implications, my findings therefore contribute to understanding the effect of different levels of fears on message receivers' defensive responses in the context of tailored communication.

Although campaign planners may not expect such a decrease in tailored message's effect under the high fear condition, previous studies have warned of even more negative consequences of using highly fearful images in messages. For instance, the presence of fearful and vivid graphic descriptions of not adopting the recommended behaviors (Slater, 1999) tends to cause an unintended, counterproductive outcome (Hale & Dillard, 1995; Job, 1988; Witte & Allen, 2000), as a result of psychological defensiveness (Brown, 2001). In other contexts, Brown and Smith (2007) empirically found that presenting emotive imagery appeared to cause a negative evaluation of messages and even reduced participants' perceptions of health risks. In a similar vein, when participants were asked to visualize the seriousness of the consequences of unhealthy behaviors, they showed fewer behavioral changes in response to highly fearful messages (Keller & Block, 1996). Therefore, it is important to consider how to control the effects of such message attributes in regards to interrupting persuasive message processing.

As for theoretical implications, the study's findings provide various discussion points. Since the area of regulatory fit is a burgeoning field, there is still much room for further investigation. Avnet and Higgins (2006) have pointed out that it is especially important to examine how some motivational factors (e.g., arousal) interplay with regulatory fit to provide in-depth understanding of the fit's effects. Although regulatory fit theory underscores the unique experience of "feeling right" that comes from the fit regardless of individuals'

moods/arousals, no other empirical studies have attempted to examine these factors' effects in the context of tailored messages. As the current findings show, it is quite possible that different arousal conditions can evoke different emotional responses among message receivers, which also influence their subsequent judgments, independent of "feeling right." Message receivers under the fit condition may perceive the recommended behavior as having more value because they experience "feeling right" from regulatory fit. However, the presence of a fear-arousing sound or image can also diminish the value of recommended behaviors due to an increase of their defensive tendencies. Because the main focus of the study was not examining regulatory fit as a trait in state, my findings are limited to a discussion of the interaction between the experience of feeling right and fear control. Future studies should investigate how message receivers' feelings right from the fit interplay with their emotional responses toward message attributes to expand our knowledge of the association between motivational factors and regulatory fit.

While message attributes are not directly associated with the effect of regulatory focus and message frame, the current study suggests the possibility that participants simultaneously activated their defensive tendencies when exposed to highly fearful content that may cause negative feelings, even under the condition of regulatory fit. For example, participants under the high fear condition processed tailored message less systematically than participants under the low fear condition. Therefore, the researcher contributes to the discussion of how regulatory fit increases the value of subsequent evaluations by considering the level of fear involving negative feelings.

Moreover, the results of this experiment fill in the part of the puzzle concerning the effects of fear-evoking appeals by providing a mechanism for the effect of tailored messages on

persuasion. The main effect of fear first showed that a high fear-arousing message is not always as persuasive as a low fear-evoking message. These findings are consistent with previous studies in which exposure to low or moderate levels of fear arousing messages are more likely to be persuasive in fostering healthy behaviors (Boster & Mongeau, 1984). In response to highly fearful threats, Rosko-Ewoldsen and his colleagues (2004) found that a high fear appeal message tends to increase participants' defensive reactions as well as decrease their ability to recall their attitude toward the danger (e.g., breast cancer) and the recommended behavior (e.g., breast self-examination) from memory. Some scholars have pointed out that the difficulty to recollect attitudes toward certain threats is problematic because people tend to attend less to the detailed information of such threats on the messages and not practice the recommended action (Roskos-Ewoldsen, 1997; Roskos-Ewoldsen & Fazio, 1992).

The current study shows that participants under a high fear condition tended to become involved with fear control processes, such as allocating fewer cognitive resources on message processing, even under the fit condition. For example, under the regulatory fit condition, participants who read a low threatening message processed the tailored messages more slowly and carefully than participants who read a high threatening message. Following previous studies' findings, this difficulty in activating attitudes toward the threat under the condition of high fear may be one explanation for lack of message elaboration and further persuasive effectiveness. Overall, such findings support the possibility that a highly fearful message makes people pay less attention and engage in less elaborative message processing, which fits in with the EPPM that supports a decrease of fears' effect under the condition of high threat.

The Mediating Roles of Defensive Avoidance and Message Processing

One contribution of this research to the body of literature on persuasion is its investigation into the underlying mechanism behind persuasion by demonstrating the mediating effects of defensive avoidance and message processing on the effectiveness of tailoring messages with fear arousing content. Although this research partially replicates past studies concerning the critical role of avoidance and message elaboration on persuasion, it does not merely provide the support for prior demonstrations of regulatory fit and fear effects by relying on mostly confirmed variables. Instead, I included the secondary task reaction time data, in addition to a thought-list and message fluency measurements, to see how participants allocate their cognitive resources during watching fearful PSA messages. The tendencies of defensive avoidance were also examined in various perspectives regarding perceived message relevance, message quality, and reactance to the messages.

Message elaboration in response to tailored messages. The data demonstrated a regulatory fit principle whereby more elaborate message processing occurred under conditions of compatibility versus incompatibility. In terms of STRTs, the findings show that promotion-oriented participants who were exposed to gain frames with a low fear appeal slowly responded to secondary tasks in comparison to promotion-oriented participants who were exposed to gain frames with a high fear appeal. Under a low fear condition, the data also indicated that participants who experienced the fit allocate more cognitive resources to message processing than participants who experienced nonfit. A similar pattern was found for prevention-oriented individuals who experienced the fit under a low fear condition at the $p < .10$ level. Consistent with the discussion of regulatory fit, the findings in which more cognitive resources were spent in message processing under the fit condition implies that participants who were exposed to

tailored messages were more likely to engage in systematic thinking, rather than heuristically scanning the messages. Under this scope, the current findings propose that the STRTs can work well to estimate people's cognitive reaction toward threatening messages per millisecond and provide more fruitful debate regarding message processing. Such findings fit well with the discussion of the LC4MP, which explain how individuals allocate their limited cognitive resources while they process emotion-arousing televised messages. As expected, the more participants spend their cognitive resources to attend to the tailored messages, the less cognitive resources were left over to respond to the secondary task, which indirectly confirmed as a slower response to the secondary task. These findings are notable especially for researchers who are interested in persuasion and fear appeals to expand the current discussion on a certain stimuli effect in terms of real-time message elaboration and cognitive load.

However, such dedicated information processing of tailored messages was not observed for participants under the high fear condition, in which vivid images and serious consequences of binge drinking were presented. Instead, participants tended to shift cognitive resources away from elaborating highly threatening messages; therefore, the researcher did not find significant mean difference between fit versus nonfit. This tendency seems to indicate initial defensive tendencies toward a fear, which lead to diminish attention to the message. In other words, once message receivers recognize a high level of fear in the message, receivers hesitate to allocate cognitive resources to the message to argue against it (e.g., Blumberg, 2000). Evidence from recent studies similarly demonstrates that emotive message presentation can reduce cognitive elaboration upon the message. Brown and Smith (2007) found that participants spent less time reading information that involves negative emotions, for example. Furthermore, some scholars have found that both the manipulation of fear right before the experiment as well as participants'

chronic fears toward the stimulus enhance such avoidance tendencies (Jepson & Chaiken, 1990; Lench & Levine, 2005). While previous studies in the LC4MP had mainly paid attention to the effects of an unpleasant stimulus on individuals' allocation of cognitive resources (Bolls et al., 2001; Bradley et al., 2001), the current findings expand the LC4MP discussion by adding the possibility that message receivers also activate their defensive response toward tailoring messages under a high fear condition.

One unexpected finding was that prevention-oriented participants who were exposed to a loss frame with a high fear appeal and prevention-oriented participants who were exposed to a loss frame with a low fear appeal did not show significant differences in regards to STRTs. This finding does not reduce the fact that the low fear condition tends to generate benefits in terms of message processing; however, it suggests that individuals' unique regulatory focus may sometimes become a factor that can influence cognitive-resource allocation when processing certain messages. Stated differently, it is possible that how the regulatory fit condition is made (i.e., a promotion focus with gain frame or a prevention focus with a loss frame) may influence individuals' placement of cognitive efforts during message processing. Although the current study did not reveal the main effect of regulatory focus, some scholars have indicated that individuals with a prevention focus are more likely to make a decision relying on arguments, rather than on affective feelings (Pham & Avnet, 2004). For that reason, participants under the fit condition may allocate a similar amount of cognitive resources to the messages in order to identify the PSA's main argument, regardless of the presence of fear appeals. It is important for future studies to consider the interplay between individuals' dispositional characteristics and other factors (e.g., need for cognition), which can also influence message receivers' STRTs, and

expand our understanding of how individuals' characteristics influence the intensity of message elaboration in fear appeal contexts.

This research especially identified processing fluency as a potential mediator between regulatory fit and persuasion. Under the low fear condition, participants who were exposed to compatible messages more fluently understood than participants who were exposed to incompatible messages. This finding is consistent with the results of previous studies that investigated the underlying mechanisms and relative impact of regulatory fit (Aaker & Lee, 2001; Lee & Aaker, 2004; Lin, 2008; Zhao & Pechmann, 2007). Such researchers demonstrate that a gain frame is more suitable for participants with a promotion focus whereas a loss frame is better matched with prevention focused participants. Because the well-fitting messages are more readily understood (Pham & Avnet, 2004), receivers selectively process such messages more fluently and perceive the messages as more relevant and useful for them (Feldman & Lynch, 1988; Pham & Avnet, 2004). In a similar vein, Feldman and Lynch (1988) argue that messages should be comprehensible or highly intelligible to be persuasive and empirically find that messages' perceived comprehensibility and perceived relevance positively affect message effectiveness.

In contrast, the post hoc analyses showed that highly emotional content tended to diminish participants' attention to tailored messages, such that even compatible messages do not seem to differ with respect to participants' fluency of processing in comparison to incompatible message. Not surprisingly, less comprehension and more heuristic message processing occurred with exposure to highly fearful content, which seemed to diminish messages' effectiveness. From this scope, the current investigation extended the previous findings by studying a three-way interaction effect among participants' regulatory focus, message frame, and a level of fear.

So, these findings are practically important for health-associated campaign organizers who are planning to deliver dynamic combinations of images and text in terms of persuasion potential.

Counting supportive arguments has frequently been used to measure individuals' message elaboration in the context of message framing effects (Yan, Dillard, & Shen, 2010). In Lee and Aaker's (2004) study, the findings showed that more supportive arguments were generated in the message compatibility condition as compared to the incompatibility condition, for instance. For that reason, the present researcher also expected to find significant differences across all conditions; however, the results only confirmed significant main effects of levels of fear, message frame, and regulatory focus respectively, not the three-way interaction effect. The findings showed that the condition of low fear ($M = 1.23$, $SE = .15$), loss framing ($M = 1.03$, $SE = .15$), and a prevention focus ($M = 1.05$, $SE = .16$) made participants generate more supportive arguments than the condition of high fear ($M = .43$, $SE = .15$), gain framing ($M = .64$, $SE = .16$), and a promotion focus ($M = .62$, $SE = .16$) respectively. In particular, the analysis of thought lists interestingly revealed that participants under a highly fearful condition simply wrote the facts of risks associated with binge drinking on the open-ended thought lists, such as "alcohol poisoning causes your brain to stop working," and "non-drinkers have better sleeping-patterns." However, they did not comment much on their thoughts about the advertising messages. In addition, the results showed that they were more likely to express their uncomfortable feelings coming from fear-arousing manipulation and mentioned their emotional responses regarding the PSAs (e.g., "that was scary" and "the music was intense and scary). Some researchers argue that participants who experience highly threatening feelings from emotive content intend to engage more in scrutinizing the messages (Freeman, Hennessey, & Marzullo, 2001; Janis & Terwilliger, 1962). In contrast, the current findings supported that highly emotional feelings lingered while

watching PSAs; thereby, such feelings might interrupt participants' thoughts about the seriousness of alcohol consumption when processing the message. Indeed, the findings of faster STRTs under the high fear condition supported this possibility that less message elaboration occurs as one of the avoidance tendencies.

Limitations associated with the thought lists findings warrant some note. These findings indicate that some stimuli that used video-oriented, tailored messages with diverse images can evoke various emotional responses and distract attention to the arguments. As such, only using thought lists might not sufficiently capture the participants' nuanced message processing. Instead, adding various measurements that can estimate message elaboration in fear appeal contexts is needed to capture individuals' mental efforts while processing emotion-evoking messages. In this light, the current study suggests that the adoption of STRTs and message processing fluency can be a more effective way to foster discussion about how participants react to emotion-evoking messages during as well as after watching PSAs.

Defensive avoidance in response to fear appeals. Because individuals generally showed immediate emotional control to the vivid graphics and threatening messages, the researcher expected to find the defensive tendencies in terms of perceived personal relevance, message quality, and cognitive avoidance across all conditions. However, the three-way interaction effects were not statistically significant for perceived personal relevance, message quality and avoidance tendency.

In terms of personal relevance, the non-significant three-way interaction seemed to stem from the strong effect of fear. The researcher found that the level of fear moderates the relationship between the experience of fit and personal relevance. Under the low fear condition, the regression analysis results revealed that participants who experienced fit evaluated the

messages as more relevant to them than participants who experienced non-fit. However, under the high fear condition, regulatory focus was not a predictor of participants' perceptions of personal relevance. The tendency of such avoidance has been frequently found in the diverse literature in relation to fear appeals (Boden & Baumeister, 1997; Hansen, Hansen, & Shantz, 1992). Of note, Witte (1992, 1994) argues that high fear is more likely to evoke fear control for message recipients, which makes them engage less in message processing and more in undermining the quality of messages and its relevance to message recipients. Therefore, participants in the high fear condition could not perceive the merits of tailored messages in comparisons to non-tailored messages. In this light, the current findings extend the previous findings that even the perceptions of personal relevance toward tailoring messages appeared to be diminished under the condition of a high fear as one of the ways for message recipients to overcome their uncomfortable feelings originating from the threats.

Regarding the mediating role of defensive tendencies, the current study revealed a marginally significant mediating role for perceived relevance between regulatory fit and attitudes toward the message. In the low fear condition, the findings showed that tailored messages had the advantage of increased perceived relevance with the messages, which led to more positive attitudes toward the message. In other words, this finding supported the possibility that participants under the fit condition feel a higher perception of personal relevance and are more motivated to engage in systematic information processing, which leads to more long-term resistant behavior and attitude changes (Aaker & Lee, 2001; Mann et al., 2004; Updegraff et al., 2007). Because no measurements were used to estimate participants' long-term attitudes and perception changes, it is not clear how this systematic process actually influences long-term persuasion. In relation to the ELM discussion, it is therefore necessary for future studies to

clarify the relationship between message elaboration under the fit and long-term persuasive effectiveness.

In terms of the message fluency findings, the researcher confirmed the association between processing fluency and personal relevance with the messages. Some scholars argue that it is necessary for messages to be comprehensible and easy to process for persuasion because those conditions are prerequisites to be perceived as personally relevant and useful (Ahluwalia, Unnava, & Burnkrant, 2001; Zhao & Pechmann, 2007). In replicating the work of Zhao and Pechmann (2007), the results from this research suggested that using tailored messages with appropriate levels of fear showed that youths easily processed the information and felt more personal relevance with the presented health issues on the message, which may in turn positively influence their attitudes toward messages. In the current study, the researcher classified the perception of personal relevance as a defensive avoidance strategy; however, the abovementioned studies propose the possibility that this perception is also associated with message processing.

With regard to reactance to the message, the current study could not find mean score differences across all conditions. Regardless of regulatory fit, participants evaluated the message in the low fear appeal condition more positively than messages in the high fear appeal condition. Some researchers propose that individuals perceived personally relevant messages with threatening emotive content as an intense stimulus and process those messages more to reject the argument (Blanton & Gerrard, 1997; Jemmott, Ditto, & Croyle, 1986; Liberman & Chaiken, 1992). Thus, more scrutiny of the threatening messages causes a negative evaluation of message quality and less persuasive effectiveness (Freeman, Hennessey, & Marzullo, 2001; Janis & Terwilliger, 1962). However, this study showed that participants in the high fear condition

similarly perceived personal relevance with the messages regardless of message matching. Also, the results of STRTs and the thought lists demonstrate that high fear appeal mainly reduced message elaboration both for participants in the regulatory fit condition and for participants in the regulatory non-fit condition. Therefore, the results of message quality suggest that fear appeal is an important factor that diminishes individuals' reactance to messages. Such findings also support an individual's likelihood to control perceived threats through fear control in the discussion of EPPM.

Lack of significant three-way interaction effects on reactance to the message and avoidance does not mean that a fear appeal may be absolutely irrelevant with defensive tendencies in tailored health communication. Rather, it might be better to understand the role of message elaboration, such as *message diagnosticity* (e.g., perceived message relevance and helpfulness) and *message comprehensibility*, as the way to actually avoid fears. Future studies need to examine several defensive tendencies in relation to message processing in order to clarify such possibility in various media circumstances.

Moreover, it is important to think about what factors should be considered in the relationship between level of fear and defensive tendencies. Regarding reactance to the message, Kelly and Block (1999) demonstrated that when a message is incompatible with an individual's prior beliefs about a certain issue, the individual will discount the quality of the message. For instance, when an individual who believes that drinking alcohol is not dangerous is exposed to a high threatening message (e.g., with several serious consequences of alcohol consumption), she or he will express higher reactance to the message and will evaluate the quality of the message process negatively. Although the literature on regulatory fit indicates that the fit effect is mostly independent from individuals' prior interests or beliefs, there is the possibility that the interaction

between people's prior thinking and fear blur the relationship between regulatory fit and persuasion. Unless researchers control such interaction effects statistically, this possibility will remain.

In terms of avoidance tendency, participants in the high fear condition expressed a greater avoidance tendency than those in the low fear condition. Brown and Smith (2007) found that the presence of high threatening images or low threatening images could differentiate between people's avoidance tendencies. Because avoidance is an immediate emotive control toward emotional content (Mondolia, 1999), the message arguments presented do not strongly relate to avoidance as much as to emotive stimuli (Brown & Locker, 2009). As such, the reason that the level of avoidance tendency was similar regardless of regulatory fit may stem from the fact that the current stimuli contained a large portion of images within the messages.

The Proposed Model from the Study

In summary, using the discussion of regulatory fit and fear appeals, the present study suggests that the level of fear was a significant moderator of the effect of tailored messages on attitudes and behavior changes regarding alcohol consumption. Although some of the attempts to identify a mechanism underlying tailoring effects have been unsuccessful, a series of data analysis empirically showed that message processing is an important variable that provides the explanations of how tailored messages are more persuasive than untailored messages in the low fear circumstance.

Consistent with the discussion of the ELM, participants who were in the low fear condition perceived a greater relevance of the tailored messages, which enhanced the possibility that they will carefully attend to the merits of such messages rather than peripherally process the messages (Petty & Cacioppo, 1986). In addition, more fluent message understanding and more

cognitive-resource allocations occur under the regulatory fit condition. Such message processing results provide important boundary conditions for positive tailoring effects. Importantly, the current research also showed the real-time degree of cognitive attention (i.e., STRTs) that participants allocated to the PSA messages during their message processing. The consistent pattern of the findings showed that tailored message has merit regarding message elaboration and allows the researcher to provide a theory-driven prediction of the association between message processing and persuasion. Indeed, enhanced processing fluency was significantly correlated with participants' attitudes toward the message, behavioral intention to follow the recommendation, and attitudes toward binge drinking. As in previous demonstrations of the ELM, the results indicated that tailored messages elicited more positive attitudes toward messages and the advocated behaviors through such message processing.

In contrast, participants who were in the high fear condition did not show mean differences across conditions. The main effect of fear showed that level of fear was the strongest factor influencing participants' perceptions of personal relevance, processing fluency, STRTs, and persuasion. In fact, participants even perceived the tailored messages like the non-tailored messages. Regarding message processing, faster message processing and less fluent understanding of the messages were observed, which is opposite the results from the low fear condition. The general results also supported that the tailored message doesn't have any merits for persuasion. Such results indirectly showed that how message elaboration is important for persuasion. Once people do not spend more effort to process the message, it cannot lead to the positive attitudes changes, as the ELM predict. Mostly, the ANOVA results showed that when perceived threat is high, participants' spend much more energy on thinking how to control their negative feelings from the highly emotional stimuli. Therefore, a high fear threatening stimuli

works strongly to remove message elaboration efforts regardless of the tailored message. In a similar vein, the results for defensive tendencies showed that participants were more involved in defensive processes toward fear, which in turn limited their ability to perceive the merits of tailored messages.

Since health-related campaigns primarily attempt to find and deliver a convincing message, it is important to understand some boundary conditions for the persuasiveness of tailored health communications. In fact, the findings indicated that increasing the perceived threat by presenting various fear-arousing techniques (e.g., scary music and fearful images) may cause the loss of tailoring effects because of less effective message processing. Therefore, if campaign planners strive to enhance message acceptance, they should consider how to improve the campaigns through the combination of certain advertising appeals and messages. The evidence from the findings indeed suggests that the merit of congruency between message frame and individuals' motivational goals occurs when such messages go with low fear appeals.

Despite several limitations regarding some findings and research methods, the current study still provides important practical applications for the area of health communications, advertising, and even political communication. The following section will provide more detailed information about how to improve current health communication campaigns, and provide new research ideas for researchers, and what factors and which effects should be addressed in future research.

Practical Implications, Limitations, and Future Research

Regarding the topic of PSAs, it is challenging for campaign planners to convince youths to change their preexisting health-related behaviors. Particularly, this project focused on the issue of binge drinking, which is a main problem facing numerous educational institutions and health

organizations. Because young people perceive the negative consequences of drinking to be less personally relevant and their social groups generally show significant acceptance of binge drinking (Engs & Hanson, 1989; Pilling & Brannon, 2007), public health-related campaigns often fail to reduce alcohol consumption ratings. Unless campaigns start adopting more effective strategies to attract youth's attention to these messages, it may be hard to expect success. With this in mind, the findings of this study indicate the importance of providing tailored messages with an appropriate level of emotion-arousing content to optimize the effectiveness of anti-alcohol drinking campaigns and behavior change.

The research findings indicated that individuals' motivational goals are one of the most important individual characteristics that should be considered when campaign planners create messages. In particular, if target audiences are not familiar with a certain health issue, it is important for message designers to enhance receivers' perceptions of their personal relevance with the message and as well as their information processing fluency for message effectiveness. From this point of view, this research showed the merits of messages tailored to receivers' motivational goals and interests in terms of message processing.

In addition, extant literature suggests that the experience of regulatory fit tends to facilitate and intensify individuals' motivations to perform self-regulated behaviors (Higgins, 2000; Hong & Lee, 2008). Such researchers have empirically found that participants who were exposed to messages tailored to their regulatory focus engaged in healthier behaviors rather than unhealthy behaviors. My research provides practical implications to health campaign organizers who are looking for effective campaign strategies. For instance, if the goal of the organization's health campaign is to increase the awareness of AIDS prevention, campaign designers can provide a compatible message that matches well with a message receiver's momentary

regulatory focus. The predominant problem of health-related campaigns is that certain unhealthy behaviors (e.g., smoking) are frequently presented in ways that highlight the negative consequences of not adopting a recommended behavior (Peracchio & Luna, 1998; Schoenbachler & Whittler, 1996). However, the current findings indicate that loss-framed information is more suitable for individuals with a prevention focus than for individuals with a promotion focus (Zhao & Pechmann, 2007). Moreover, the current research results showed that there was no significant difference between two regulatory fit conditions; participants with a promotion focus read a gain-framed message, and participants with a prevention focus read a loss-framed message. When a participant's momentary regulatory focus fits well with the message frames, both conditions show similar persuasive effectiveness. Therefore, if the campaign developers are concerned about the manipulation of regulatory fit, they can create the regulatory fit experience through either of conditions. For instance, after asking all message receivers to complete tasks regarding a prevention focus, the campaign designers can deliver only a loss-framed message to create regulatory fit. In addition to a message matching, delivering a low fear appeals in the tailored messages are also better strategies that can improve the persuasiveness of messages.

In terms of political campaigns, candidates frequently use negatively framed political advertisements to attack the opponents (Davlin, 1989). Although it is possible that such advertisements may be effective immediately in attracting voters' attention to the advertisements and enhancing their memory of the ads (Ansolabehere & Iyengar, 1995), campaign planners should keep in mind that some target audiences are more familiar with processing certain message frames than others, and they tend to appreciate being exposed to tailored messages that follow their unique interests. Therefore, it is better for the campaign planners to use appropriate

message frames for certain targets to create a specific message fit rather than spreading generalized messages.

As the current study's manipulation of regulatory fit showed, it is not difficult for health campaign organizers to prime a certain regulatory focus through media content before a PSA is aired. Applying this finding to mass media, the media context can immediately prime certain needs and goals as being more salient than others. For instance, Zhao and Pechmann (2007) suggested that the *American Idol* television show can make audience members think about achievements and rewards simply from their viewing experiences. If this is the case, running PSAs focusing on the gains of adopting the recommended behaviors right after these types of shows could be a good strategy for such campaigns' effectiveness. Moreover, new media technology developments have enabled some media-sharing websites (e.g., Youtube.com) to provide *in-stream advertising* through which ads play automatically when users click certain videos. Therefore, in the media planning process, health-related campaign planners need to consider inserting PSAs in the optimal location to increase ad exposure, and they need to think about ways to enhance message effectiveness by using the media context.

Although this above-mentioned manipulation is quite simple, there is still various ways to create the fit experience. Through some questionnaires, advertisers and campaign planners can estimate their targets' predominant regulatory focus and then provide tailored messages without manipulating such motivational goals prior to message exposure. Additionally, some scholars argue that cultural context and socialization can make individuals access a specific regulatory focus more easily, so the primary target's culture is an important factor to consider in campaign creation (Lee, Aaker, & Gardner, 2000). In particular, people in East Asian cultures tend to more be prevention oriented, whereas people in Western cultures are more likely to be promotion

oriented. Consequently, it would be interesting to examine if individuals from different cultural contexts perceive the same information differently.

There is still on-going discussion about the impact of fears on health-related attitudes and behavioral change (Hovland, Janis, & Kelly, 1953; Keller & Block, 1999; Witte, 1992, 1994). This study's findings particularly support the possibility that fear control in response to strong feelings of fear does reduce the merits of tailored messages in the context of health communication. Thus, it is important for health campaign planners to adjust the level of fear and carefully use message strategies that select particular graphics and scary sounds to moderate message recipients' perceptions of fear. One of the ways to moderate fear appeals can be using the discussion of the EPPM that suggests an association between message elements and self-efficacy (Witte, 1992, 1994). In the EPPM, scholars defined *self-efficacy* as "an individual's belief in his or her ability to perform the recommended response" (Cauberghe et al., 2008, p. 277) and found it to have a strong impact on behavioral changes (Strecher, DeVillis, Becker, & Rosenstock, 1986; Witte, 1994). The PSAs in this experiment paid attention to the seriousness of the threat (i.e., perceived severity) by using a frightening image and factual information to reinforce the recommended behavior; however, it is also important to alleviate receivers' feelings of fear by underscoring the fact that the recommended action can resolve such threats effectively. Dillard and Anderson (2004) suggest that presenting the cues in the messages, such as how the recommended behavior can remove negative outcomes, is important to convince participants and to reduce their perception of fears. When the messages lead people to believe that the recommended behavior can effectively reduce the probability that a negative outcome will occur, the message recipients tended to accept the recommendation regardless of high feeling of fears (Witte, 1992, 1994, 1998).

According to the EPPM, an individual's fear control occurs in response to a high fear, not a moderate level of fear; therefore, the current study focused on the comparison between a high fear and a low fear that are likely to generate different levels of avoidance tendencies and attitudinal changes. However, some studies have found that a moderate level of fear appeal is more effective in persuasion than low and high levels of fear (Hovland et al., 1953; Janis, 1967; McGuire, 1968). Future research should include such condition to clear up the role of fear in processing tailored health-related messages and further examine whether this holds true for health-related messages. One reason that the current study did not include a condition of moderate fear in the experimental design is that it is not easy to make a clear cut between a high level and a moderate level of fear. For instance, a condition of moderate fear appeals may contain less fearful content and image compared to a condition of high fear appeals; however, it is still possible that message receivers' perceived level of fears can be similar between two conditions if they perceived the severity of threats from such fear-arousing messages. Simply, individuals in a moderate fear condition may experience a high level of fear which was not intended. Unless researchers carefully eliminate any content that may increase the perception of fears, creating a clear difference between a high fear and a moderate fear can be extremely difficult. To resolve this practical problem, future studies should employ the manipulation check for fear appeals multiple times to develop different levels of fear.

Since researchers have found that regulatory fit can indeed enhance self-regulation resources (Higgins, 2000; Hong & Lee, 2008), it is possible that this fit experience can influence individuals' perceptions of their capability to practice certain healthy behaviors. In particular, the EPPM postulates that people will not follow the suggested behaviors unless they feel a high self-efficacy even if they perceive high threats from not doing so. On the basis of Witte and Allen's

study, my research has predominantly paid attention to the fact that people tend to activate fear control under the condition of a high fear regardless of their perceived self-efficacy (Witte & Allen, 2000). Since the main objective of this project is to investigate the effects of emotional content in tailored messages on attitudes changes, other individuals' differences responding to fears (i.e., self-efficacy) were not carefully considered as a main element. However, future studies can investigate the possible association between regulatory fit and perceived efficacy in relation to the EPPM discussion. Such examinations will contribute to our understanding of fear effects in the tailored communication context.

Although the current research provides important insight into how negative feelings arising from fear appeals interact with regulatory fit, future studies can broaden our understanding of feelings or arousal in this context by examining ads having multiple production techniques and emotional appeals. Regardless of fear appeals, scholars argue that ads with music, animation, or visual images can distract audiences' attention away from ad disclaimers and can reduce their overall memory of the ads (Hoy & Andrews, 2004). Therefore, it is important to explore how individuals process televised commercials with tailored messages in various media contexts. Moreover, scholars suggest that certain feelings (e.g., anger and guilt) are not conducive in enhancing message effectiveness (Dillard & Peck, 1998). For instance, if message receivers perceive that advertising messages are manipulated to persuade them, they are more likely to feel anger and avoid accepting the messages' arguments. In the current study, some participants commented negatively about the PSAs because they believed the ads were exaggerated to evoke negative feelings on their thought lists. As such, future research needs to investigate how recipients' perceptions of messages can influence their feelings, and researchers

need to carefully explore how to eliminate such negative impressions toward persuasive techniques, such as fear appeals and personalized advertising messages.

In relation to manipulating level of fear, the current stimuli combined various consequences of consuming alcohol, such as health appeals and social appeals. Although the results revealed a main effect of fear on persuasion, the current measures did not provide insight into participants' attention to specific information within the message. For instance, depending on how fully the target audience's has adopted a health recommendation, some scholars have found that certain appeals can be much more effective than others to increase healthy behavior (Miller et al, 1988). One way to find out the target audience's specific concerns is to measure members' prior intentions to adopt the healthy behavior. These results can provide important information, such as what kinds of drinking consequences the target audience truly cares about and what information makes scares them. To extend the current study, future studies can investigate how personalized appeals influence persuasion. Moreover, prior knowledge is another important factor that influences people's perceptions of fear appeal. For instance, Nabi and colleagues (2008) found that arousal intensity decreases if participants have high knowledge of the presented issues. Therefore, a certain group can be very resistant against fear appeals. Once campaign planners uncover targets' specific fears toward binge drinking as well as their related knowledge levels, they can use this information to create campaign messages, in particular, what information and appeals should be used for specific target groups.

The limitations associated with this research afford additional research opportunities. Because the researcher conducted the experiment to examine the causal relationship among variables as well as a convenient sample was recruited for this investigation, such limitations weaken the ability to generalize the results to a broader population. However, all the findings

meaningfully provide several practical implications for anti-binge drinking campaigns. As previous health-related reports have suggested, young adults and adolescents actively engage in drinking behaviors without seriously considering the problems of alcohol consumption (Cohen et al., 2007; Pilling & Brannon, 2007). Therefore, the findings from a college student sample can provide insight into how to effectively use tailored messages to improve such campaigns for youths. Moreover, the researcher purposely created artificial stimuli for this study; therefore, it will be beneficial to explore the effect of real PSAs in various media contexts to enhance the external validity of these findings. Even though the stimuli of messages were created carefully and reviewed several times, some sentences still look a little bit awkward and were not easy to understand because of some terms or message frames. Therefore, such limitations in messages should be improved for real health campaigns, and future studies should more dedicatedly develop messages for future studies to examine the effect of message frames effectively.

Second, I expected there to be more systematic processing under the fit condition that would lead to relatively longer-term attitudes/behavioral changes. However, the current study did not measure how such dedicated message processing affected participants' real drinking behaviors or long-term attitude changes. Therefore, it is meaningful to examine how much participants recalled the messages and to what extent they really reflected on the recommendations later in the experiment. Moreover, the STRT results showed that 25 participants did not respond to the secondary task, and two participants responded to the task very slowly. Therefore, around 10% of the participants' data was excluded for the data analyses, which may partially limit significant findings. To avoid losing such a large amount data in future studies, researchers should consider placing a simple STRT exercise before presenting the real stimuli. In the main experiment, I also tried to assign an equal number of participants to each

condition; however, incomplete responses were eliminated, which resulted in unequal sample sizes for certain conditions. This is another limitation in this study. To resolve the issue of unequal cell sizes across conditions, normality of all mediators and dependent variables were examined. In addition, I transformed skewed data and reported the estimated marginal means, based on statistical recommendations (Montgomery, 2001). Unequal sized cells may be problematic because the more scores in the cells can make these cells have more weight in computing these means. However, the sample sizes in this study seem quite reasonable in testing proposed hypotheses and research question. According to *G*power* analysis program, around 230 participants are required to be confident with the study findings at $p < .05$ (e.g., only 5 in 100 chance make a false conclusion) (Cohen, 1977). The total number of samples ($N = 248$), therefore, provided sufficient power to account for the significance of findings. However, it is still possible that unbalanced cell sizes might have created unexpected results; therefore, future studies need to make equal cell sizes across conditions to avoid the abovementioned potential problems.

Also of particular interest would be research exploring the current issue in the new media context, such as with YouTube or other social media contexts. Since such websites provide a space where people can share both content and personal thoughts, it is possible that certain content as well as others' opinions of certain content can influence receivers' perceptions of messages and their attitudinal changes.

Third, the current experiment assumed that all participants across the conditions had a similar level of prior intentions to drink alcohol and similar attitudes toward drinking behaviors. As an extension of the current study, it is also important to explore how participants' prior attitudes interact with the level of fear appeals in the tailored messages context. To some degree,

scholars argue that such interactions can make participants rely more on heuristics instead of message elaboration (Keller & Block, 1999). Future studies should investigate whether such factors (e.g., prior belief, attitudes, and behaviors) can reduce the effectiveness of certain message strategies. Or the researcher can control for such variables' effects statistically in advance to see the relationship between the independent variables and outcome variables.

Fourth, the researcher also only paid attention to one health topic (i.e., stopping excessive alcohol consumption) relating prevention behaviors; therefore, future studies should examine diverse detection behaviors (e.g., HIV testing) that evoke much higher perceived risks. Scholars argue that certain message frames are more effective than others in particular contexts depending on the perceived risks of certain health behaviors (Meyerowitz & Chaiken, 1987; Rothman et al., 1999). In this light, exploring diverse topics will provide more detailed practical applications for message planners about how to make successful campaign.

Fifth, some of the defensive avoidance variables showed a lower internal consistency; therefore, the researcher needed to exclude some items to reach an acceptable level. Because previous studies have successfully found internal consistency among items that compose a certain variable, the researcher adopted the same questionnaires in the study. However, even the same items cannot guarantee that all questionnaires will consistently measure certain variables regardless of the study context. Therefore, it is important for researchers to consider the purpose of the study, the context of the study, and participant groups when they choose scale items.

Sixth, failing to find a correlation between STRTs and the persuasion variables indicates that this real-time response did not have high predictive validity, such as for which participants will evaluate the message more positively and express more intentions to adopt the recommended behaviors and which participants will not. The pattern of STRT results was

consistent with processing fluency in some extent; therefore, it seems to measure what it is supposed to measure (i.e., message elaboration). However, the STRT variable is mostly related to cognitive-resource allocation so that such a measure may have strong predictable power to assess people's memory, such as recognition and recall (Lang et al., 2006; Leshner et al, 20010). The current research did not include how much participants memorized the arguments from the messages. In future studies, researchers can include such memory-related variables as dependent variables and see whether STRTs is indirectly associated with persuasion via memories.

Lastly, it is not clear why some defensive avoidance measurements had no effect on persuasion. As stated above, one possible explanation is that tailoring messages with fear-evoking content are more relevant to message scrutiny, rather than simple defensive tendencies. Moreover, it is possible that different questions are more likely to be associated with a lower intention to adopt health behaviors, such as the *COPE denial scale* (Carver, Scheier, & Weintraub, 1989). This scale is frequently adopted in health psychology literature to assess participants' avoidance tendencies (e.g., "I say to myself this isn't real), and successfully showed how participants cope with certain stressful situations through using those psychological strategies. Therefore, future studies can investigate what kinds of avoidance strategies people use to recover from negative feelings by adopting more extensively used measurements.

In conclusion, the research findings suggest tailoring health messages have a benefit to persuade message recipients, in part, by the increased message processing fluency and perceived relevance under the fit condition. In some cases, when tailored messages contained highly fearful graphics and verbal explanations, those messages were not more effective than untailored messages. Because people are more involved in defensive processes toward a high fear, they tend to have a limited ability to perceive the merits of tailored messages in the high fear condition.

When the PSA messages do not distract participants' attention through using such high fear appeals, tailored messages, in contrast, tend to guarantee the persuasive effectiveness of health communication. Understanding such processes and relationships can therefore provide an avenue for future research to continue the study and discussion of persuasion and message effects.

In relation to anti-binge drinking campaign, it is important for campaign planners to remember that they need to provide what young people mostly want to know about. Although youths already knew about the costs of drinking alcohol, many of them drink alcohol as the pattern of binge drinking. Unless they understand why they should not drink alcohol a lot, they will not stop drinking alcohol. Consequently, if the campaign planners provide only the well-known information (e.g., negative consequences of drinking alcohol) to audiences, the message receivers will not be persuaded as much as the planners expected. In this study, some participants provided an important point of what information the future anti-binge drinking campaigns need to include in the messages. Some students revealed that they do not have any idea of how often or how much consumption of alcohol can put them in danger. Inclusion of such information in the PSA message can be helpful to make young people think about whether their drinking habits are dangerous or not. In addition, once target audiences carefully process the information, such fluent message processing tends to lead long-term attitudes and behavioral changes. Therefore, in addition to providing tailored messages, it is also important to enhance the receivers' exposure to the messages. By using various message outlets, the campaign planners can make them to have more opportunities to think about the issue of alcohol consumption. Although several colleges had used "social-norms" campaign (e.g., emphasizing the low tendency of binge drinking on campuses) for years, binge drinking is still one of the main problems in colleges and universities. One of the reasons might be that the current campaigns may not dwell on what youths are truly

afraid of. As this study identifies, various consequences can be the reason why individuals decide to reduce alcohol consumption. By analyzing target group's specific interests, the future campaigns can provide more unique and, at the same time, effective messages to different groups. Although this study only used one of the ways to create tailored messages, there are several techniques for creating compatible messages that reflect individuals' interests and concerns. Therefore, examining diverse tactics to make message-matching condition in various media circumstances can provide more ideas, such as what would be the best way to deliver tailored messages through certain media. For future studies, it is still important to explore several ways to persuade people in a diverse media setting. Finally, as the current study shows, a combination of messages and some images or sounds can reduce the effectiveness of messages. To avoid such possible outcomes, the campaign organizers should cautiously select message attributes.

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APPENDIX A: MANIPULATIONS OF REGULATORY FOCUS

Manipulation Task # 1

Prevention Focus. Let's think about your childhood. Please remember a moment that your parents or school teachers warned you about dangers and asked you to obey their rules for your safety or security. Now, please write down those moments of obligations to your parents or school teachers. Please list those experiences in simple sentences.

Now, we encourage you to think about your current responsibilities and duties to secure your life. What kinds of duties are you following to protect yourself? In particular, try to remember the moment that you gave up something to avoid bad results, or due to your feeling of responsibilities. For example, if instead of going to parties you decided to study, it might be your experiences of responsibility to secure good grades that guided you to do something safe. Please list as many of such experiences as possible.

Promotion Focus. Let's think about your childhood. Please remind the moment that your parents rewarded for you your good behaviors. Write about your best moments of reward from your parents or school teachers. How did you achieve something good? How these experiences encourage your aspirations toward something? Please list those experiences in simple sentences.

Now, we encourage you to think about your current achievements that help to advance your life. In particular, try to remember the moment of your success. For example, to achieve the fellowship or A grade, if you decided to spend more time studying and reading more books, it might be your experience of advancements that promoted your good grades. How did you make an effort to advance your life? What makes you encourage to do better behaviors? Please list those experiences as many as possible.

Manipulation Task #2

Prevention Focus. Please see the advertisement carefully. In particular, please pay attention to the messages on the advertising.

“Prevent Clogged Arteries! Drink Welch’s Grape Juice!”

Welch’s Grape Juice has been a favorite for more than six generations. Today, our classic Purple Grape Juice has been joined by a wide variety of wholesome juices to please your taste. They’re all made with the same attention to quality as the original.

Further, preliminary medical research suggests that drinking purple grape juice may contribute to healthy cardiovascular function. Growing evidence suggests that diets rich in antioxidants may reduce the risk of some cancers and heart disease. According to research by the United States Department of Agriculture, Welch’s Purple 100% Grape Juice has more than three times that naturally-occurring Vitamin C and Iron than other juices. Purple grape juice’s antioxidants are commonly attributed to the flavonoids contained in the juice that help keep arteries clear so that blood can flow freely. Therefore, it is healthy to drink!

We are proud to say that everything bearing the Welch’s label meets the very highest standards for great taste, goodness, and healthiness.

Promotion Focus. Please see the advertisement carefully. In particular, please pay attention to the messages on the advertising.

“Get Energized! Drink Welch’s Grape Juice!”

Welch’s Grape Juice has been a favorite for more than six generations. Today, our classic Purple Grape Juice has been joined by a wide variety of wholesome juices to please your taste. They’re all made with the same attention to quality as the original.

Further, preliminary medical research suggests that drinking purple grape juice may contribute to the creation of greater energy! Growing evidence suggests that diets rich in Vitamin C and Iron lead to higher energy levels. According to research by the United States Department of Agriculture, Welch's Purple 100% Grape Juice has more than three times that naturally-occurring Vitamin C and Iron than other juices. Our Concord grapes and Niagara grapes are harvested only at the peak of flavor so that Welch's Grape Juice is great tasting as well as energizing. Plus, it is simply fun to drink!

We are proud to say that everything bearing the Welch's label meets the very highest standards for great taste, enjoyment and energy!

APPENDIX B: MANIPULATION OF MESSAGES

High Fear – Loss Frame

- Do you care about losing your healthy body? Binge drinking is a fast and strong way to ruin your body.
- If you overuse alcohol, you can suffer from alcohol poisoning, serious damage to the liver and brain, and impaired judgment. Abusing alcohol also increases your chances of driving drunk and inciting violence.
- A tremendous amount of college students drink excessively without knowing the possible side effects. In particular, once you drink alcohol, your bloodstream absorbs it into your body. From that moment, it starts to harm the brain, which controls all parts of your bodily functions.
- Then, what would happen to you next?
- In 2000, approximately one third of pedestrians ages 16 and older who died in traffic accidents were intoxicated.
- Binge drinking impairs judgment, so if you overuse alcohol that will make you take risks like injuring yourselves or others.
- Binge drinking can increase the risk of violence, which may result in serious legal problems.
- Alcohol abuse on college campuses significantly increases women's risk of sexual assault.
- While many symptoms from overused drinking are serious, 90% of drinkers consume alcohol in the pattern of binge drinking.
- Alcohol poisoning can cause your brain to stop sending proper signals to the respiratory system, which can cause you to stop breathing and eventually die.
- Alcohol is the one of main leading causes of death between people ages 15-24.
- If you abuse alcohol, you cannot avoid serious health problems like increased risk of cancer, neurological disorders, serious memory loss, cardiovascular disease, and even death.
- Alcohol can put your health in high risk! It's your choice! Know when to stop! Guard yourself against losing your health.

High Fear – Gain Frame

- Do you want to have a healthy body? Not abusing alcohol will give you a healthier life.
- If you do not abuse alcohol, you will exercise better judgment and keep your body healthy. You will be more likely to drive safely and make better decisions before engaging in sex or violence.
- A tremendous amount of college students drink excessively without knowing the possible benefits of not abusing alcohol. If you do not overuse alcohol, you are less likely to have concerns about bad impacts of alcohol on the brain, which controls all parts of your bodily functions.
- When you are not abusing alcohol, what kinds of positive things can happen to you?
- A statistic shows that not abusing alcohol dramatically contributes to a decrease of traffic accidents and death rates among ages 16 and older.
- If you do not overuse alcohol, you can have better ability to judge appropriately in relation to yourself and others, and control your behaviors with a good temper.
- Nondrinkers less involved in the risk of violence and experience less serious legal problems than binge drinkers.
- Not abusing alcohol on college campuses can significantly reduce numbers of women who may experience a serious sexual assault.
- While many benefits from not overused drinking are clear, 90% of drinkers consume alcohol in the pattern of binge drinking.
- When you do not binge drinking, you can keep a healthier respiratory system that are getting the proper signals from the brain and control your regular breathing to maintain you being alive.
- Not abusing alcohol is the one of effective ways to cut off tremendous number of death between people ages 15-24.
- If you do not abuse alcohol, you can have a healthy body, exercise better judgment, perform better academically, and avoid criminal behavior.
- Limiting your alcohol drinking is an easy and effective way to promote your health! It's your choice! Know when to stop! Give yourself a more healthy and pleasurable life!

Low Fear – Loss Frame

- Do you care about losing your healthy body? Binge drinking is a fast and easy way to ruin your body.
- If you overuse alcohol, you can suffer from skin damage, poor sleep quality, hangovers, bad breath, and weight gain.
- A tremendous amount of college students drink excessively without knowing the possible side effects. In particular, once you drink alcohol, your bloodstream absorbs it into your body. From that moment, it starts to harm the brain, which controls all parts of your bodily functions.
- Then, what would happen to you next?
- Drinking disrupts sleep patterns, which can make it harder to stay awake and concentrate during the day. For this reason, drinking impair one's studies.
- Binge drinkers are more likely to be overweight than nondrinkers and have higher blood pressure.
- If you do binge drinking, you can experience digestive disturbance and vomiting. No one enjoys a hangover!
- Alcohol can make people more angry and aggressive, so drinkers may behave differently than usual.
- While many symptoms from overused drinking are serious, 90% of drinkers consume alcohol in the pattern of binge drinking.
- When you overuse alcohol, it can slow your response time and impair your motor skills.
- Alcohol is the leading cause of poor performance in school and harm people's mental health.
- If you abuse alcohol, you cannot avoid certain health problems, like extreme sleepiness, fatigue, difficulty breathing, low blood sugar, and impaired judgment.
- Alcohol can put your health in trouble. It's your choice! Know when to stop! Guard yourself against losing your health.

Low Fear – Gain Frame

- Do you want to have a healthy body? Not abusing alcohol will give you a healthier life.
- If you don't overuse alcohol, you can sleep better, have fresh breath, and be less concerned about becoming overweight and having skin problems. .
- A tremendous amount of college students drink excessively without knowing the possible side effects. In particular, once you drink alcohol, your bloodstream absorbs it into your body. From that moment, it starts to influence the brain, which controls all parts of your bodily functions.
- When you are not abusing alcohol, what kinds of positive things can happen to you?
- If you do not binge drinking, you can keep your regular sleep patterns, which can make you to stay awake and concentrate during the day. For this reason, nondrinkers tend to perform better in schools than binge drinkers.
- Nondrinkers are also more easily manage their weight without concerning overwhelming appetites from alcohol and keep safe level of blood pressure.
- If you do not overuse alcohol, your stomach will maintain in good condition that are free to concerns about some digestive problems. All enjoy a good body condition!
- Nondrinkers are more likely to control their behaviors as normally and have a stable temper without experiencing sudden abnormal feelings, such as aggressiveness.
- While many benefits from not overused drinking are clear, 90% of drinkers consume alcohol in the pattern of binge drinking.
- When you do not binge drinking, you can respond any threats immediately and have a good motor skill to move properly.
- Not abusing alcohol is one of the effective ways to improve people's academic performance in school and develop their mental health.
- If you don't abuse alcohol, you can develop and keep healthy sleep patterns, healthy breath, better school performance, and even better mental health.
- Limiting your alcohol drinking is an easy and effective way to promote your health! It's your choice! Know when to stop! Give yourself a more healthy and pleasurable life!

APPENDIX C: QUESTIONNAIRES

Measurements of Defensive Avoidance

[Perceptions of Personal Relevance]

Please provide your assessment of the messages you have just seen.

- a. Overall, the message on binge drinking I just read was interesting to me.
Definitely No 1 2 3 4 5 6 7 Definitely Yes
- b. Overall, the message on binge drinking I just read was relevant to me.
Definitely No 1 2 3 4 5 6 7 Definitely Yes

[Avoidance]

The next set of questions asks for your agreement, on a seven-point scale, about the message that you just read.

- a. I try not to think about the possibility of developing serious negative consequences of drinking alcohol.
Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree
- b. I sometimes wish I could avoid situations in which I am faced with facts about drinking alcohol and its negative consequences.
Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree
- c. When I think about the threats of something like the serious negative consequences of drinking alcohol, I find it best to get my mind on something more pleasant.
Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree
- d. When I think about the prospect of negative consequences of drinking alcohol, I sometimes feel like eating too much.
Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree

[Message Quality]

Please indicate your evaluation of the messages about drinking alcohol.

“Overall, the message on binge drinking I just read was...”

| | Strongly Disagree | ←-----→ | | | | | Strongly Agree |
|--------------|-------------------|---------|---|---|---|---|----------------|
| | | | | | | | |
| Credible | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Unbelievable | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Exaggerated | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Convincing | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Informative | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Helpful | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Valuable | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

| | | | | | | | |
|-------------|---|---|---|---|---|---|---|
| Good advice | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Important | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

Measurements of Message Processing

[Message Fluency]

Please indicate your evaluation of the messages you have just seen by marking the appropriate number.

Difficult to Understand 1 2 3 4 5 6 7 Easy to Understand

Difficult to Think About 1 2 3 4 5 6 7 Easy to Think About

Not at all Detailed 1 2 3 4 5 6 7 Extremely Detailed

[Elaboration upon Message]

Please write down all of the thoughts and feelings you had after you saw the advertisement. In the lines provided below, please write down the first thought/idea that came to your mind on the first line, the second thought/idea on the second line, etc. Here are some examples. You might remember and write down the subject of the ad (e.g., its features, benefits, and roles), the ad itself (e.g., the appearance of the models, visual images, copies, story lines, themes), and some other elements in the ad (e.g., the meaning of the sentences).

1st in my mind:

2nd in my mind:

3rd in my mind:

4th in my mind:

Measurements of Persuasion

[Attitude toward the Message]

The next set of questions asks for your agreement, on a seven-point scale, about the messages that you just saw.

a. I support what the messages on the advertising were trying to accomplish.

Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree

b. I agree with the position advocated in the messages.

Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree

c. I feel positively about the main point of the messages on the advertisement.

Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree

d. Knowing when to stop drinking is important for maintaining good health.

Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree

[Attitude toward Binge Drinking]

Please indicate below your attitude toward drinking alcohol after reading the messages. You can choose the number that best represents your level of agreement.

“I think that binge drinking is for health.”

| | | | | | | | | |
|------------|---|---|---|---|---|---|---|----------------|
| Acceptable | 1 | 2 | 3 | 4 | 5 | 6 | 7 | Not Acceptable |
| Beneficial | 1 | 2 | 3 | 4 | 5 | 6 | 7 | Not Beneficial |
| Good | 1 | 2 | 3 | 4 | 5 | 6 | 7 | Bad |

[Behavioral Intention]

Please indicate below your intentions toward drinking alcohol after reading the messages. You can choose the number that best represents your level of agreement.

a. I intend to act in ways that are in agreement with the position advocated by the messages on drinking alcohol.

Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree

b. I plan to act in ways that are consistent with the position advocated by the messages on drinking alcohol.

Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree

c. I am going to make an effort to do what the message on drinking alcohol asked me to do.

Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree

[Intention to Drink]

Please indicate below your intentions about drinking alcohol after watching the PSA messages. You can choose the number that best represents your level of agreement.

a. All things considered, I would very much like to change my drinking habits, such as binge drinking.

Definitely No 1 2 3 4 5 6 7 Definitely Yes

b. I am planning to change my drinking habits very soon.

Definitely No 1 2 3 4 5 6 7 Definitely Yes

c. I drink too much.

Definitely No 1 2 3 4 5 6 7 Definitely Yes

d. I intend to use alcohol regularly in the future.

Definitely No 1 2 3 4 5 6 7 Definitely Yes

- e. I don't ever plan to change my drinking behavior unless I see my health suffering.
 Definitely No 1 2 3 4 5 6 7 Definitely Yes

Manipulation Checks

[Manipulation Checks for Message Framing]

Please indicate your assessment of the messages about anti-binge drinking.

- a. "This ad focused on the advantages of not overusing alcohol."
 Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree
- b. "This ad showed the positive things that can happen if someone does not engage in binge drinking."
 Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree
- c. "This ad focused on the disadvantages of overusing alcohol."
 Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree
- d. "This ad showed the negative things that can happen if someone does engage in binge drinking."
 Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree

[Manipulation Checks for Regulatory Focus]

Please check the number that best describes your agreement with the following statement.

"The writing tasks and attributes highlighted in the ad made me pay attention to"

Advancements/Achievements 1 2 3 4 5 6 7 Protection/Security

[Manipulation Checks for Fear Appeals]

Please check the number that best describes your agreement with the following statement.

"The attributes highlighted in the ad, which you have just observed, are"

- | | | | |
|------------|----------------------------|---------------|------------------------------------|
| | None of this feeling | ←-----→ | A great deal of this feeling |
| a. Fearful | 1 | 2 3 4 5 | 6 7 |

"The attributes highlighted in the ad, which you have just observed, made me feel"

- | | | | |
|-----------|----------------------------|---------------|------------------------------------|
| | None of this feeling | ←-----→ | A great deal of this feeling |
| b. Afraid | 1 | 2 3 4 5 | 6 7 |
| c. Scared | 1 | 2 3 4 5 | 6 7 |

APPENDIX D: CODING GUIDELINES OF THOUGHT LISTS

Coding Procedure

All coding steps and procedures are adopted from Yan, Dillard, & Shen (2010)'s study and revised in consistent with the dissertation topic (i.e., anti-binge drinking) to code the thought lists.

1. **Thought Units:**
Code the open-ended thought lists as thought units.
2. **Cognitive vs. Emotional:**
Code each thought list as a cognitive outcome (1) or emotion-relevant outcome (0).
3. **Relevant vs. Irrelevant:**
Code each cognitive thought unit either a relevant thought (1) or a non-relevant thought (2). Don't code emotion-relevant outcome.
4. **Supportive Arguments vs. Counterarguments:**
Code each relevant thought as supportive argument (1) or counterargument (2). If the thought response is not related to agreement or disagreement with the message, code this thought as (3) others. Don't code non-relevant thoughts.

The following examples in coding rules are individuals' response to a message in relation to drinking alcohol.

Coding Guideline

Step 1: Coding Unit

Each thought list states that a stand-alone idea is a thought unit. Hatfield and Weider-Hatfield (1978) defined a thought unit as “the minimum meaningful utterance having a beginning and an end” (p.46), and generally operationalized it as a single sentence. In the study, participants were asked to write only one sentence on a series of thought lists. In case of exceptions, if participants stated more than one sentence on each thought list, these multiple sentences were coded individually.

Step 2: Distinguishing Cognitive Response from Emotional Response

1. Cognitive Outcomes

Cognitive outcomes are individuals’ thoughts in response to the messages. The following could be the cognitive responses, such as assessments of the message, any thoughts that are relevant to their past/current/future behaviors/attitudes, or a question about the messages.

- 1) An assessment of the messages or advertisements
Examples: “I believed what I saw”; “Trying too hard to convince”; “It’s very relevant to today’s society”; “The information was very informative”
- 2) Thoughts about their behaviors/attitudes or others
Examples: “I thought whether or not I was a binge drinker and suffered effects”; “Think of friends who engage in similar behavior”; “I am glad I am not a heavy drinker”
- 3) A question
Examples: “What’s the benefit of this PSA?”; “Informative”

2. Emotional Outcomes

Emotional outcomes are individuals’ momentary feelings in responding to the messages or advertisements. The emotional responses involve feelings that are related to the messages/advertisements or feelings that are not related to the messages/advertisements.

Examples: “Scary and dramatic”; “Sad”; “The part of the ad that highlighted sexual assaults was very scary”; “The pictures used in the car wreck scene and the colors used in the advertisement made me fearful”; “I am not surprised by the message”; “I am hungry”; “I am happy”

Step 3: Distinguishing Relevant Thoughts from Non-Relevant Thoughts

1. Relevant Thoughts

Any thought lists that are associated with the message/advertisements and the source of the information.

Examples: “Too dramatic, over-exaggerated”; “Visual images were effective in showing the disadvantage of binge drinking”; “I like the idea”; “I need to watch my binge drinking”

2. Irrelevant Thoughts

Any thought lists that are not related to the message and the source of the information.

Examples: “I am tired”; “I am on diet”; “I was thinking about the exam”

Step 4: Coding Relevant Cognitive Outcomes that are on Messages/Advertisements

Coding Types. Code each relevant cognitive response as one of three types, *Agreement/Supportive Arguments (1)*; *Disagreement/Counterarguments (2)*; and *Others (3)*.

1. *Agreements/Supportive Arguments:* Any cognitive response that involves a positive assessment of the messages/advertisement and the source of the information

Example: “If this ad was on TV, more kids my age would be influenced not to binge drink”

2. *Disagreements/Counterarguments:* Any cognitive response that involves a negative assessment of the messages/advertisement and the source of the information.

Example: “Alcohol is not that bad”

3. *Others:* Any thoughts that do not represent either positive or negative evaluations of the messages/advertisement or the source of the message. These include thoughts that describe the message in the same manner in which it was presented.

Example: “Music played correlated with the mood of the text and video”; “The appearance of the models was very realistic”

The Default Code: Others. If the message-relevant cognitive response does not apply to any of the following rules, please code the response as *Others*.

1. Coding the Evaluative Messages

Usually, there are many ways to express agreement or disagreement with the messages. Therefore, first discern if the cognitive response to the message contains a clear assessment of the message that could be recognized as either a supportive argument or counterargument.

Agreements/Supportive Arguments

Examples: “Good message for young people; “The ad was very negative, but made me think a lot”; “Drinking will affect my grade”; “how harmful it really is”

Disagreements/Counterarguments

Examples: “Doesn’t pertain to me”; “I am still going to drink”; “I don’t want to know about negative consequences of binge drinking”; “The ad felt like kind of a joke”

2. Coding the Messages that are Relevant to the Impacts

Any cognitive response that mentions the positive impact the message has on participants can be coded as “Agreements/Supportive Arguments.” In particular, when participants’ responses support the intended purpose of the message, or the responses indicate that participants learned some information from the messages that is related to the advocacy of the information, then the thought unit should be coded as *Agreement*. If the general tone of the response is counterargument of the messages, the thought needs to be coded as *Disagreement*.

Agreements/Supportive Arguments

Examples: “The risks I am facing”; “I thought about my intake of drinks”; “More risks than I realized”; “I need to be more careful”; “Comparing the ad to my life, and what I can do to stay healthy and safe”

Disagreements/Counterarguments

Examples: “The ad tried too hard to convince me”; “I don’t think drinking can make you dead”

In addition, when the cognitive response is not clear enough to be coded as an agreement or disagreement, the response should be coded as *Others*. Please see the following examples.

Others

Example: “I know what the message was for”

3. Coding the Cognitive Responses that are Relevant to Advocating the Messages and Participants Themselves

Any cognitive response that contains any identification with message advocacy or participants themselves in relation to their behaviors/attitudes should be coded as “Agreements.” Conversely, when the unit does not advocate the messages, it should be coded as “Disagreements.”

Agreements’ Examples: “Drinking will cause harm to my body”; “Brings back times I have binged drank and makes me not want to do it again”

Disagreements’ Example: “I don’t really think that binge drinking will cause any of the negative consequences”

Others’ Example: “People/family of mine who are alcoholics”

When the message does not show any identification with the advocacy of the messages or no relevance with the persuasive intention, then the unit must be coded as “Others.”

Example: “The much made the PSA very intense”

4. Coding One-Word Responses or Ambiguously-worded Responses

The cognitive response can be one-word or ambiguously worded. These responses are not easy to assess due to their multiple meanings. For instance, “unbelievable” can mean that the participant felt the message was not written in a trustworthy manner (a negative assessment of the messages). At the same time, the abovementioned word can mean that the participant regrets her prior attitudes/behaviors toward binge drinking, such as “I can’t believe that I didn’t recognize the negative consequences of overusing alcohol. That’s unbelievable” (a positive assessment of the messages). But, there is no way to figure out whether the word belongs to the former or latter category. Therefore, if only one word was provided on the thought list, it should be counted as “Others.”

5. Coding Message-Relevant Questions

When some participants respond in the form of a question, please assess whether such responses advocate the message or disagree with the message. There may be a few instances in which participants ask about some facts or the source of the information. When the responses contain the abovementioned information, they should be coded as “Others.”

Others’ Examples: “How many people are died because of binge drinking?; “Who made this advertisement?”

6. Coding Multiple Words or Sentences Within a Thought List

If participants provide several sentences or clauses to one thought list answer, each one should be coded separately. In most cases, the context should determine if each statement or clause is a supportive argument or counterargument. All abovementioned coding rules should be considered within context, and each one should be coded according to the tone of the response.

Example: “Good message for college students//but it doesn’t convince me” (2 thought units)

VITA

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